THE 400 LARGEST PRIVATE COMPANIES

HOW DELFORD SMITH'S PASSION FOR FLYING MADE HIM RICH

A FRESH-START JUNK BOND FUND

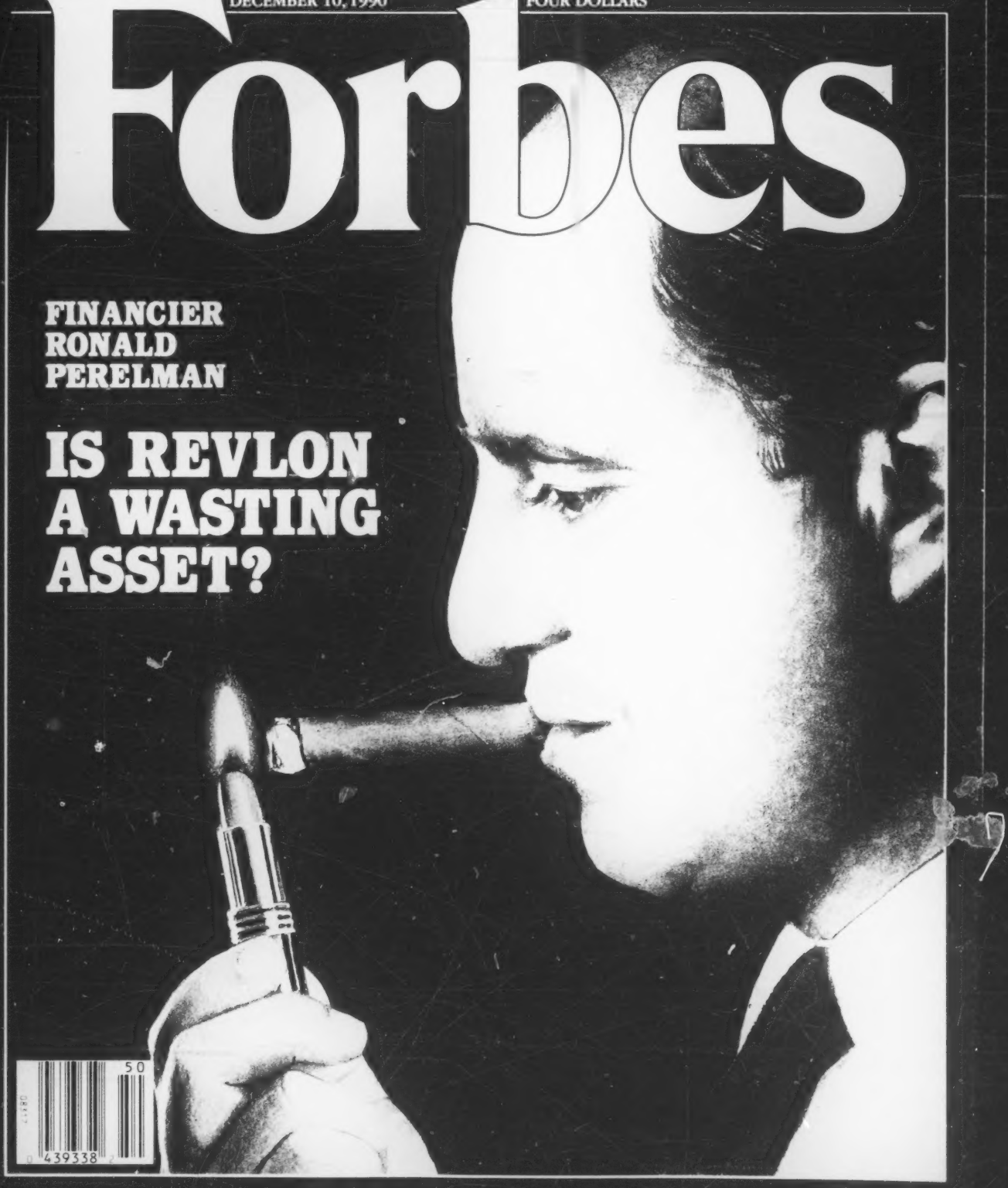
DECEMBER 10, 1990

FOUR DOLLARS

Forbes

FINANCIER RONALD PERELMAN

IS REVLON A WASTING ASSET?



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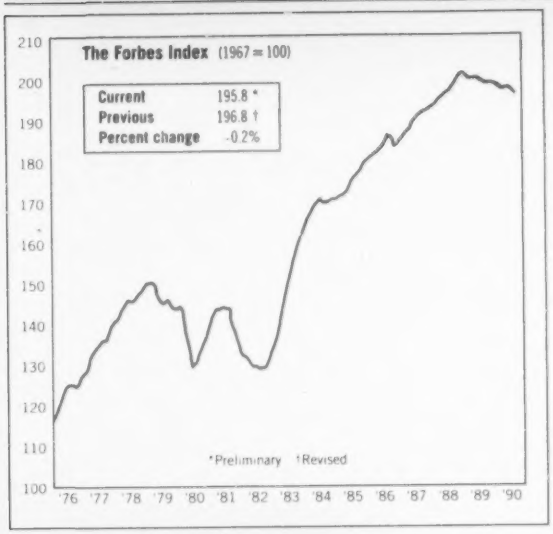
The Forbes Index



Evidence mounts that the economic expansion has come to a halt. In October, for example, an average of 430,800 new unemployment benefit claims were filed each week, a 9.6% increase from September's average and the most since May 1983. Also, after steadily increasing for most of the year, industrial production fell 0.8% as factories operated at only 82.6% of capacity. Retail sales rose a modest 0.1% in October. But all of that gain and then some was attributable to higher gasoline prices; in real terms, retail sales were off 0.5%.

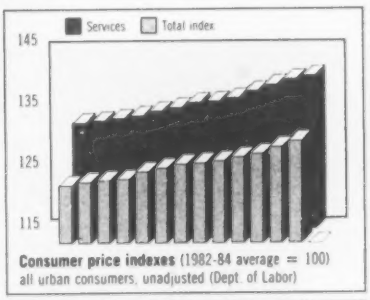
Other key rates	Source	Status
Prime rate	Chase Manhattan Bank	10.0%
Auto sales year to date vs. 1989[1]	Ward's Automotive	-3.3%
Index of leading indicators September vs. August	Dept of Commerce	-0.8%
Trade balance last 12 months ending August 1990	Dept of Commerce	-$100 bil
Producer price index October vs. 1989[2]	Dept of Labor	6.4%
GNP 3rd quarter vs. 2nd—annualized growth	Dept of Commerce	1.8%
NBER Experimental Recession Probability Index[3]	Natl Bureau of Economic Research	6.0%

[1]U.S.-based manufacturers, excludes imports, as of 11/10/90 [2]Finished goods [3]September 1990

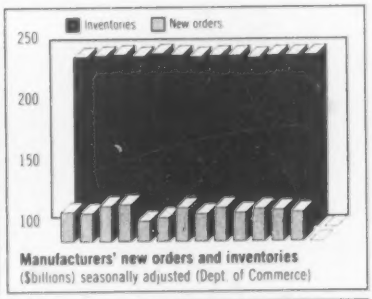
Index Components

The Forbes Index is a measure of U.S. economic activity composed of 8 equally weighted elements: Total industrial production, new claims for unemployment compensation, the cost of services relative to all consumer prices, new housing starts, total retail sales, the level of new orders for durable goods compared with manufacturers' inventories, personal income, total consumer installment credit.

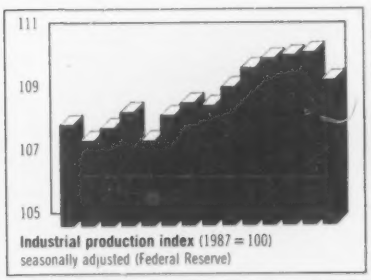
To measure these 8 elements, FORBES monitors 10 series of U.S. government data. The last 14 months' data for each series are presented below.



Consumer price indexes (1982-84 average = 100) all urban consumers, unadjusted (Dept. of Labor)

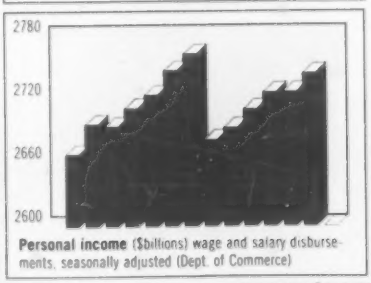


Manufacturers' new orders and inventories ($billions) seasonally adjusted (Dept. of Commerce)



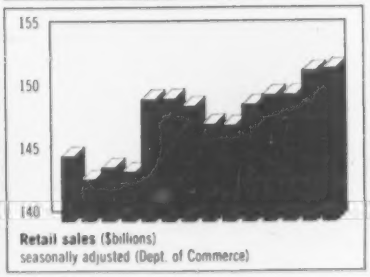
Industrial production index (1987 = 100) seasonally adjusted (Federal Reserve)

New housing starts (thousands) privately owned, unadjusted (Dept. of Commerce)



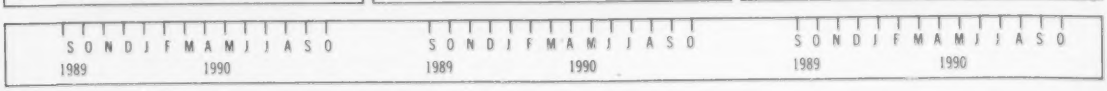
Personal income ($billions) wage and salary disbursements, seasonally adjusted (Dept. of Commerce)

New unemployment claims average for month (thousands) seasonally adjusted (Dept. of Labor)



Retail sales ($billions) seasonally adjusted (Dept. of Commerce)

Consumer installment credit ($billions) total, seasonally adjusted (Federal Reserve)



Since the Bhopal disaster, Union Carbide Corp. has been struggling to make sense of its businesses and improve earnings. The struggle has yet to pay off.

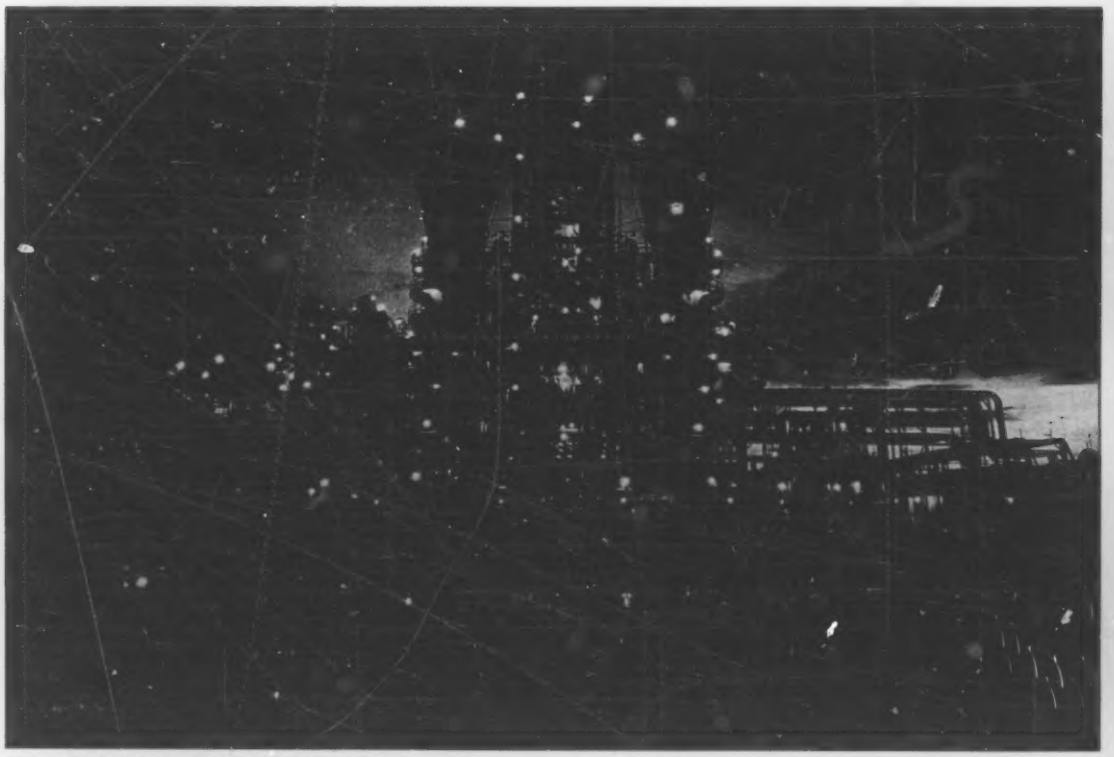
Breaking up is hard to do

By Alyssa A. Lappen

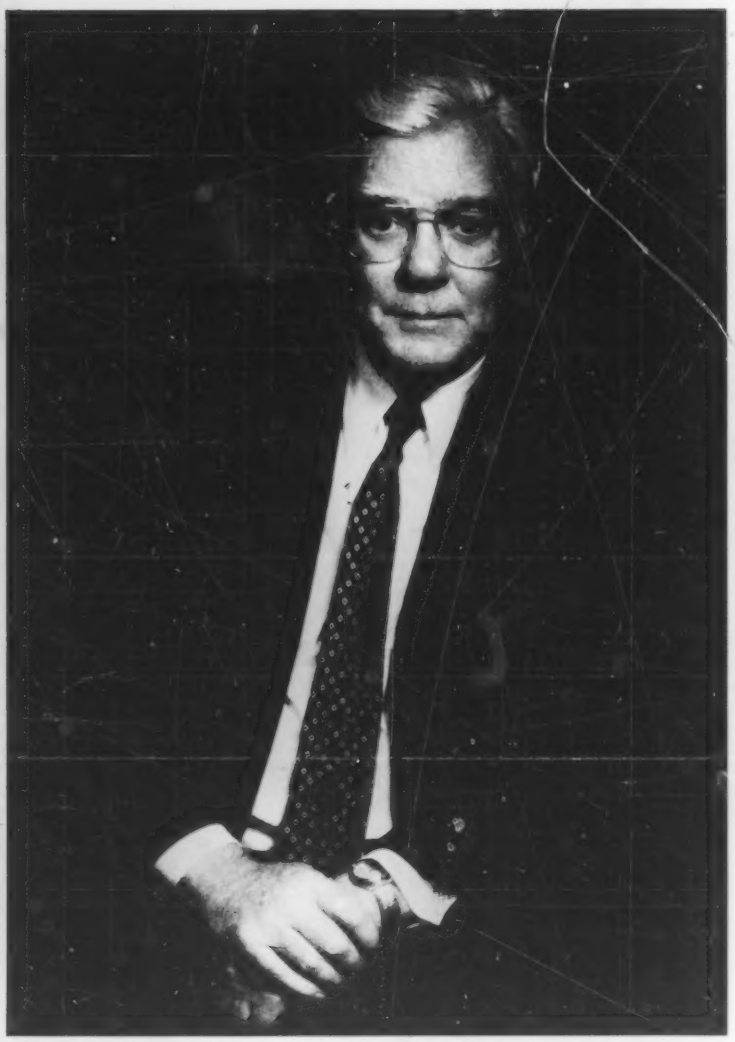
Is UNION CARBIDE on the block? Chief Executive Robert Kennedy says he will look at anything, "and I mean anything," to create what he calls "real value" for shareholders. Presumably that could include selling off all or part of the $8.6 billion (latest 12-month revenues) chemical company, which is facing possible new legal fallout from the 1984 Bhopal disaster *(see story, p. 108)*.

Kennedy isn't saying what he's up to. But one clue came when he split the company last year into three separate operating units—chemicals and plastics, industrial gases, and carbon products. Publicly, Carbide said the move would make each business more accountable. But the investment banking community was told by Carbide management that the reorganization would make one or all of the businesses easier to spin off, sell publicly or merge. Says John Haaga, a New Canaan, Conn.-based chemical industry consultant and former Carbide employee:

"Chances are that in five years



Union Carbide polyethylene plant in Louisiana
Good technology that hasn't lived up to its promise.



Union Carbide Chairman Robert Kennedy
"We'll look at anything—and I mean anything."

Union Carbide will not be Union Carbide anymore."

With debt of $3.3 billion, about 52% of Carbide's capital, Kennedy's maneuvering room is limited. He can't expand overseas or diversify. Profits this year are expected to sink at least 40% from 1989, to about $355 million ($2.85 a share). Carbide's bigger U.S. rivals—including Dow, Du Pont and Monsanto—are much more profitable *(see table, p. 106)*. Next year, likely to be soft for all major chemical companies, Carbide's earnings could drop another 20%.

The 1984 Bhopal disaster fundamentally altered Carbide. By 1985 the company's market value had plunged to less than $3 billion. GAF Corp.'s opportunistic Samuel Heyman accumulated a big block of stock that year and offered $78 a share, or $5.3 billion, for the company.

To repel Heyman, Kennedy's predecessor, Warren Anderson, borrowed $2.8 billion, raised $3.6 billion by selling assets, and paid those shareholders who tendered $3.3 billion, or $85 a share. The other 45% of shareholders got a payout of $1.1 billion, or $33 a share. That repelled Heyman but weakened Carbide to the point that it still has trouble keeping up with its competitors.

During the 1980s Dow, Monsanto and Du Pont all diversified into such value-added areas as oil refining, drugs and specialty chemicals. But to fight Heyman, Carbide sold its consumer businesses: Prestone antifreeze, Ever-

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How Union Carbide stacks up

Union Carbide earned a net margin of 4% in the last year, compared with 6.1% at Du Pont, 8.1% at Dow and 6.8% at Monsanto. Only Quantum did worse. As for its market capitalization, Carbide is valued at considerably less than Air Products or Arco Chemical, companies that are roughly one-third its size.

Company	Sales[1] ($mil)	Earnings[1] ($mil)	1980 earnings	Recent price	P/E	Market cap ($mil)	Net profit margin	5-year average ROE
Du Pont	$37,976	$2,325	$716	34½	10.0	$23,149	6.1%	12.2%
Dow Chemical	18,890	1,537	805	43	7.5	11,610	8.1	21.8
Exxon Chemical	10,390	556	345	NA	NA	NA	5.3	18.2
Monsanto	8,800	605	149	44¼	9.5	5,752	6.8	14.4[2]
Union Carbide	8,596	348	673[4]	16	7.0	1,900	4.0	24.2[2]
BP Chemicals	5,400	335	NA	NA	NA	NA	6.2	NA
Mobil Chemicals	3,668	341	119	NA	NA	NA	9.2	NA
Shell Chemical	3,483	338	128	NA	NA	NA	9.7	NA
Air Products & Chemicals	2,895	230	113	50¼	12.0	2,800	7.9	14.4
Arco Chemical	2,677	358	NA	34½	9.0	3,300	13.3	30.0[3]
Quantum Chemical	2,517	30	103	13½	12.0	365	1.1	9.0[3]
Vista Chemical	724	77	NA	22½	3.0	247	10.6	50.2[3]

[1]Trailing 12 months. [2]Four-year average. [3]Three-year average. [4]Including discontinued operations. NA: Not available or not applicable.

Source: Standard & Poor's.

eady batteries and Glad Bags. Now, nearly two-thirds of Carbide's sales come from cyclical commodities such as polyethylene, the profits from which are currently falling.

Even in markets where it's a leader, Carbide can't count on much growth. It can currently make 2.6 billion pounds a year of ethylene glycol, a $600 million a year (revenues to Carbide) commodity used in antifreeze and polyester fibers. Demand for this capital-intensive product grew only 2% last year—one of the lowest growth rates in the industry. Yet Carbide has announced plans to build another 660 million pounds of capacity by 1994 to serve the Far East—at a cost of $150 million.

When it belonged to Carbide, Prestone used about a third of Carbide's glycol. After selling Prestone to First Brands, Carbide wanted to keep its biggest customer, and agreed to tie First Brands' price for glycol to its own price for low-cost naphtha and other petrochemical feedstocks. But as tight capacity pushed glycol prices from 20 cents per pound in 1987 to 50 cents in 1989, Carbide's feedstocks remained cheap. The First Brands deal cost Carbide at least $200 million in profits.

In 1977 Carbide developed a breakthrough process, called Unipol, to make a stronger type of polyethylene. But today the company makes only about 11% of the nation's polyethylene, compared with 18% at Quantum Chemical and 11% at Dow.

Carbide in effect traded market share for royalties (now about $100 million a year) by licensing the Unipol technology. But it sandbagged its licensing efforts in the 1980s by selling its own Unipol polyethylene at a discount instead of at the 15% premium it could have commanded. That may be one reason Carbide licensees began to defect—Exxon to Japan's Mitsui, Chevron to British Petroleum and Phillips Petroleum.

Carbide's most attractive business is its industrial gas unit. Carbide is number one in the North American industrial gas business, with $2.4 billion in sales. But its market share has dropped to 28% from 32% just since 1986. Sighs Edgar Hotard, president of Carbide's industrial gas business, "It will be hard for us to gain back share."

While not ruling out anything that will increase Carbide's market value, Kennedy would clearly rather keep its assets intact. "Our strategy," he says, "is to be the leading company in the world in the products we make. We believe our returns over the product cycle will exceed our cost of capital and that we'll perform better than comparable companies. That hasn't been true the last 20 years, but we are much more focused today."

But suppose Kennedy does decide to dismember Carbide. What would the pieces bring? Anantha Raman, a veteran chemical industry analyst, figures the chemicals and plastics business alone would be worth $5 billion. He prices the industrial gases operation at $2.6 billion, and carbon products at $900 million. After allowances for debt and potential liabilities (excluding Bhopal), Raman figures Carbide would be worth about $4 billion, or $35 per share, double its current price of $16 a share. Mitsubishi and Carbide just announced a joint venture on Carbide's carbon products division. Rumored candidates to buy other pieces of Carbide include BP, Shell and Japan's Showa Denko.

Kennedy agrees that the company is severely undervalued. In October Carbide bought back 20 million shares at an average of $16 a share, reducing the outstanding shares to 124 million. Yet the buyback has done little to enhance the company's market value.

Union Carbide's executives thought they were preserving the company's independence when they saved it from Sam Heyman four years ago. It now looks as if they merely bought some time. ■

What with steady growth and a slug of new buyouts, privately owned enterprise is getting too big to ignore. Here are the country's 400 largest private companies.

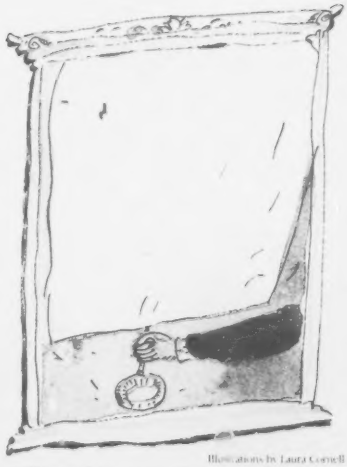
The very private sector

By Tina Russo McCarthy

RONALD PERELMAN and the financial entrepreneurs who would be like him have a lot to do with the big sales numbers on this, FORBES' sixth Private 400 list.

Perelman, whose travails as a financier turned company manager are told in the story beginning on page 218, converted Revlon Inc. from a public to a private company in 1987, by exchanging bonds and bank debt for Revlon's publicly traded stock. Revlon is now the largest part of MacAndrews & Forbes, number 13 on the table on page 226. All told, at least 120 of the 400 companies listed on the following pages are there because of leveraged buyouts that removed public shareholders from the picture. In many cases (Revlon is one), the formerly public company still has enough bonds outstanding to have to file financial reports with the Securities & Exchange Commission. But if the general public cannot get the stock, we treat the enterprise as privately owned.

Thanks in large part to those LBOs, the minimum sales needed for a private company to make the 400 largest list has climbed from $225 million when the list was created in 1985 to $475 million this year. Combined sales of the 400 this year are $609 billion, up from $592 billion last year. Employment is 4 million, up from 3.9 million.



Illustrations by Laura Cornell

We consider a company private if it has too few common shareholders to file with the SEC or, if it does file, its stock is not available to the general public. Most of the companies fall into the former category. United Parcel Service is an example of the latter: The stock is widely held, but only by employees. Shares of King Kullen Grocery and Charter Medical trade via brokers' "pink sheets," but shareholders are too scarce to force these firms to file with the SEC.

Our survey includes only firms that operate for profit. Charitable foundations (FORBES, *Nov. 26*) and government agencies are excluded. Also excluded are mutuals, cooperatives, joint ventures and companies 50% or more owned by another public or private corporation, unless those owners are passive investors. For example, Kohlberg Kravis Roberts holds large stakes in RJR Nabisco, Stop & Shop Cos. and Jim Walter, all listed here.

Foreign-owned firms are excluded from our survey of U.S. private companies. TLC Beatrice International Holdings does most of its business in Europe but is included because it is U.S.-owned and -headquartered.

With private companies it often takes digging beyond press releases and public statements to accurately gauge their revenues. ComputerLand publicizes a revenue figure of $2.6 billion. But this does not represent revenues for any single corporate entity; instead, it is the combined sales of independently owned retail stores. Even with liberal consolidation rules, the parent company's revenues would be only $123 million.

Such subtleties explain this year's sharp decline in revenues we report for Minneapolis-based Carlson Cos. Last year we accepted the company's figure of $5.3 billion in revenues. This year, alerted by an article in *Corporate Report Minnesota*, we adjusted the figure to allow for an anomaly in the way the company counts sales. The company's travel agencies treat the full cost of a trip as income, whereas standard accounting practice is to count only the agency's commission. This and other adjustments brought Carlson's estimated revenues down to $1.6 billion.

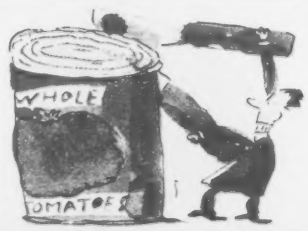
Except where noted, the revenue shown is for the most recent fiscal year. Some companies provided estimates, while other estimates were developed by FORBES and confirmed by outside sources.

Acknowledgments

We wish to thank the following sources that helped us gather data on private companies: *Accounting Today*, NYC; *Advertising Age*, NYC; *Atlanta Business Chronicle*, Atlanta; *Auto Age*, Van Nuys, Calif.; *Automotive News*, Detroit; *Business Atlanta*, Atlanta; *Business Journal of New Jersey*, Morganville; *Business Journal Sacramento*, Sacramento; *California Business*, Los Angeles; *Convenience Store News*, NYC; *Corporate Report Minnesota*, Minneapolis; *Colorado Business Magazine*, Englewood; *Crain's Chicago Business*, Chicago; *Crain's Cleveland Business*, Cleveland; *Crain's Detroit Business*, Detroit; *Crain's New York Business*, NYC; *Dallas Business Journal*, Dallas; FORBES magazine library, *Georgia Trend*, Atlanta; *ice Accutrack*, Baltimore; *ino Information Services*, NYC; *Inc.*, Boston; Perrin H. Long Jr., Lipper Analytical Services, NYC; *Los Angeles Business Journal*, Los Angeles; *Mergers & Acquisitions*, Philadelphia; *Alan Mottus*, Mottus & Associates, NYC; *Nation's Restaurant News*, NYC; *New England Business*, Boston; Nielsen Marketing Research, Northbrook, Ill.; *Ohio Business*, Cleveland; *Oregon Business*, Portland; Tom Pirko, Bevmark, Los Angeles; *Professional Builder*, Des Plaines, Ill.; *Progressive Grocer's Marketing Guidebook 1991*, Stamford, Conn.; *Public Accounting Report*, Minneapolis; *Puget Sound Business Journal*, Seattle; *Restaurants & Institutions*, Chicago; *San Francisco Business Times*, San Francisco; Sarty, NYC; Beni Steinman, *Beer Marketer's Insights*, NYC; *US Distribution Journal*, NYC; *Virginia Business*, Richmond; Frank Walters, M. Shanken Communications, NYC; *Washington Post*, Washington, D.C.

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
1	1	Cargill	Whitney MacMillan	$44,000e	55,000	intl marketer of agri & bulk commodities
2	2	Koch Industries	Charles Koch	17,190e	9,300	petroleum, natural gas, chemicals, minerals
3	5	Continental Grain	Donald L Staheli	14,850e	14,500	commodity trading & processing
4	3	•RJR Nabisco	Louis V Gerstner Jr	12,764	48,000	food products, tobacco
5	6	United Parcel Service	Kent Nelson	12,400	122,000	package delivery
6	8	•Southland	Jere W Thompson	8,352	35,604	convenience stores
7	7	Mars	Forrest E Mars Jr	7,500e	23,000	candy manufacturing, pet food, rice
8	28	American Financial	Carl H Lindner	7,286[1]	53,000	insurance, s&L, food prods, radio & tv
9	9	•RH Macy	Edward S Finkelstein	7,270	76,000	department stores
10	10	•Supermarkets General	Jack Sutterman	6,299	52,300	grocery stores, home improvement centers
11	11	•NWA	John Dasburg	6,100e	43,000	airline
12	15	Publix Super Markets	Howard M Jenkins	5,386	24,800	grocery stores



Leveraged buyout activity cooled off considerably this year. The largest LBO in 1990 was Prime Computer, a $1.1 billion J.H. Whitney & Co. deal. Other big ones: DiGiorgio, Del Monte Foods and Gulfstream Aerospace.

13	12	MacAndrews & Forbes Holdings	Ronald O Perelman	5,381	44,000	cosmetics, banking, finl svcs, recreation equip
14	16	•Montgomery Ward & Co	Bernard F Brennan	5,323	49,700	department stores
15	18	Bechtel Group	Riley P Bechtel	5,100	27,800	engineering & construction
16	21	Ernst & Young	Ray J Groves[2]	4,780e	63,271	accounting
17	22	KPMG	Jon C Madonna	4,750	75,000	accounting
18	23	ARA Services	Joseph Neubauer	4,600	131,000	food svcs, uniform rentals, child care svcs
19	31	Goldman, Sachs	Steven Friedman	4,600e	5,800	investment banking, securities brokerage
20	20	•Trans World Airlines	Carl C Icahn	4,507	33,000	airline
21	14	Peter Kiewit Sons	Walter Scott Jr	4,342[3]	23,100	construction, coal mining, packaging
22	24	•Hospital Corp of America	Thomas F Frist Jr	4,294	50,000	hospitals & health care facilities
23[4]	17	•Stop & Shop Cos	Lewis G Schaeneman Jr	4,280e	42,000	supermarkets, discount department stores
24	30	Arthur Andersen	Lawrence A Weinbach	4,160	56,000	accounting
25	34	Coopers & Lybrand	Peter R Scanlon	4,140e	67,000	accounting
26	29	Marmon Group	Robert A Pritzker	3,881	25,074	ind materials, auto & medical prods
27	36	Deloitte & Touche	J Michael Cook	3,700e	60,000	accounting
28	33	•Levi Strauss & Co	Robert D Haas	3,628	32,000	apparel
29	27	•Owens-Illinois	Joseph Lemieux	3,605	47,000	packaging
30	122	Dyson-Kissner-Moran	John A Moran	3,367	3,600	multicompany
31	26	•American Standard	Emmanuel A Kampouris	3,334	33,300	building materials
32	39	•Jack Eckerd	Stewart Turley	3,000	30,000	drug, optical & photo stores
33	64	SC Johnson Wax	Richard M Carpenter	3,000e	13,000	specialty chemicals, home care prods
34	98	JMB Realty	Neil Bluhm	2,977e	4,500	real estate
35	46	Price Waterhouse	Shaun F O'Malley[4]	2,940e	46,000	accounting
36	41	Advance Publications	SI Newhouse Jr	2,935e	19,500	communications

•Went private via leveraged buyout since 1985. e Estimate. [1]Includes revenues from United Brands. [2]William L Gladstone is co-chief executive. [3]Reflects recent divestitures. [4]Jeffrey H Bowman is co-chairman.

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
37	42	•Grand Union	Joseph J McCaig	$2,916	22,000	grocery stores
38	37	Lefrak Organization	Samuel J LeFrak	2,875e	18,000	real estate devel & mgmt, entertainment, oil
39	45	HEB Grocery	Charles C Butt	2,850e	10,000	grocery stores
40	49	H Group Holdings	Jay Pritzker	2,840e	55,195	hotels
41	59	Ingram Industries	E Bronson Ingram	2,640e[1]	4,600	consumer prods, inland marine trans, coal, oil
42	56	McLane	Drayton McLane Jr	2,622	4,200	food distributing
43	32	Anschutz	Philip F Anschutz	2,600e	23,255	railroads, oil, gas, real estate, mining
44	62	Metromedia	John W Kluge	2,530e	18,732	restaurants, telecommunications, investing
45	47	Riklis Family	Meshulam Riklis	2,508	39,600	variety & discount stores, mfg & distr apparel
46	51	Hallmark Cards	Irvine O Hockaday Jr	2,500	21,500	greeting cards & related prods
47	38	Milliken & Co	Roger Milliken	2,500e	14,000	textiles
48	52	Penske	Roger S Penske	2,500e	9,800	truck leasing, diesel mfg, auto dealerships
49	43	•Revco DS[2]	Boake A Sells	2,490	20,000	drug stores
50	44	Astroline	Fred Boling	2,400e	60	oil trading
51	63	•Alco Health Services	JF McNamara	2,297	2,400	pharmaceuticals & related prods
52	57	Meijer	Hendrik Meijer[3]	2,275e	12,078	department & grocery stores
53	55	•Borg-Warner	James F Bere	2,261	75,300	auto parts, security svcs
54	■	Hertz	Frank A Olson	2,253	18,000	vehicle & equip rental
55	54	Finevest Services	William R Berkley	2,250	14,000	food processing, insurance, health care svcs
56	48	Belk Brothers	John M Belk	2,200	30,000	department stores
57	53	•Burlington Industries	Frank S Greenberg	2,181	27,500	textiles
58	50	JM Family Enterprises	WM Donohoe	2,134	2,226	distrib Toyota vehicles & related prods
59	66	Hearst	Frank A Bennack Jr	2,095e	14,000	publishing, broadcasting
60	67	Estée Lauder Cos	Leonard Lauder	2,093	10,000	cosmetics

Among private household goods makers, S.C. Johnson Wax (Johnson waxes, Pledge, Glade Aerosol and Agree Shampoo) is the largest, with sales of $3 billion.

61	60	•Best Products	Jerry Goldress	2,090	7,000	general merchandise, jewelry stores
62	58	RAB Holdings	Richard A Bernstein	2,025	2,760	medical supp, health & beauty aids, finl svcs
63	78	George E Warren	Thomas L Corr	2,017	35	petroleum trading
64	68	•Payless Cashways	David Stanley	2,004	16,000	home improvement centers
65	71	Dominick's Finer Foods	Jim DiMatteo	2,000	7,500	grocery stores
66	75	Hy-Vee Food Stores	Ron Pearson	2,000	9,000	grocery, drug & convenience stores
67	69	Red Apple Group	John Andreas Catsimatidis	2,000	10,000	grocery & convenience strs, oil, gas stations
68	■	Yucaipa Cos	Ronald W Burkle	2,000e	10,045	grocery stores
69	72	Cox Enterprises	James C Kennedy	1,974	16,355	newspapers, broadcasting, cable tv, auto auctions
70	88	•Charter Medical	William A Fickling Jr	1,960e	15,000	hospital mgmt
71	84	DHL Worldwide Express	Patrick Foley	1,900e	20,000	international air express
72	82	Lincoln Property	A Mack Pogue	1,900	4,000	real estate development & mgmt
73	73	Steelcase	Frank H Merlotti	1,896	21,500	office furniture & systems

■Not on last year's list. •Went private via leveraged buyout since 1985. e Estimate. [1]Estimate for fiscal year ending December 1990. [2]In Chapter 11. [3]Doug Meijer is co-chairman.

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
74	76	Graybar Electric	Edward McGrath	$1,894e	4,800	electrical equip wholesaling
75	93	Hook-SupeRx	Philip E Beekman	1,870e	12,000	drug stores
76	77	•HealthTrust	R Clayton McWhorter	1,866e	23,000	hospitals
77	74	Giant Eagle	David S Shapira	1,850e	10,000	grocery stores
78	86	Amway	Jay Van Andel	1,842	7,500	household & personal care prods
79	97	Global Petroleum	Alfred A Slifka	1,786	450	petroleum wholesaling & retailing
80	79	Domino's Pizza	Thomas S Monaghan	1,778	100,000	pizza delivery & carryout
81	■	Phar-Mor	Michael I Monus	1,652	15,000	discount drug & variety stores
82	13	Carlson Cos	Edwin C Gage	1,648e	68,000	travel, hotels, resorts, restaurants, svcs
83	87	BeefAmerica	Joseph Amore	1,600	2,500	meatpacking
84	109	Hillman Co	Henry L Hillman	1,600	5,400	real estate, distrib office prods, investments
85	40	Farley	William Farley	1,550e	53,000	household fabrics, apparel, auto parts

JMB Realty shows $3 billion in revenues, versus $1.4 billion last year. Its 1989 acquisition of Panhandle Eastern's real estate development company contributed to the increase.

86	■	•Prime Computer	James F McDonald	1,520	10,670	computer systems
87	80	•Coltec Industries[1]	David I Margolis	1,517	13,300	aerospace, automotive, industrial equip
88	106	JR Simplot Co	Gordon Smith	1,500	9,100	food processing, fertilizer, livestock
89	99	Trump Organization	Donald J Trump	1,494e	25,000	hotels & casinos, real estate devel, airline
90	96	William Lyon Cos	William Lyon	1,492	1,004	home building, apartment & real estate devel
91	101	Schwan's Sales Enterprise	Marvin Schwan	1,485e	6,000	frozen foods
92	94	Helmsley Enterprises	Harry B Helmsley	1,480e	13,000	real estate brokerage, hotels
93	103	•Reliance Electric	John C Morley	1,411	13,000	industrial & telecomm equip
94	112	•York International	James T Dresher	1,409	10,100	air-conditioning, heating, refrig equip
95	95	Holiday Cos	Ronald A Erickson	1,400e	5,000	convenience stores, grocery wholesale
96	85	Sammons Enterprises	Robert W Korba	1,400	6,900	insurance, cable tv, industrial equip
97	132	Golodetz	Marc L Ginzberg	1,389	1,250	trading, agri, real estate, venture capital
98	■	•General Instrument	Donald H Rumsfeld	1,377	15,900	electronics
99	92	•Hillsborough Holdings[2]	Joe B Cordell	1,376	8,200	home bldg, natural resources, indust mfg
100	110	Oxbow	William Koch	1,370	300	energy, oil, real estate
101	91	Union Holdings	Anthony L Geller	1,360	2,549	food processing, meatpacking
102	115	Wegmans Food Markets	Robert B Wegman	1,357	6,261	grocery stores
103	119	Edward J DeBartolo	Edward J DeBartolo	1,350e	15,000	real est devel & mgmt, dept strs, racetrack
104	105	Polo Ralph Lauren	Ralph Lauren	1,350	3,000	apparel, home furnishings & accessories
105	102	Kohler	Herbert V Kohler Jr	1,349	14,796	plumb equip, engines, generators, furniture
106	125	Frank Consolidated Enterprises	Zollie S Frank	1,345e	1,950	auto dealerships & travel mgmt
107	108	Duracell Holdings	C Robert Kidder	1,335	8,000	consumer batteries & lighting prods
108	35	Cumberland Farms	Richard Jensen	1,330e	4,500	convenience stores, gas distributing
109	107	Gates	Charles C Gates	1,330	18,000	rubber & formed fiber prods, recharg batteries

■Not on last year's list. •Went private via leveraged buyout since 1985. e: Estimate. [1]Formerly Colt Industries. [2]In Chapter 11.

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
110	100	Dunavant Enterprises	William B Dunavant Jr	$1,300	2,200	intl & domestic cotton merchant
111	114	Southwire	Roy Richards Jr[1]	1,300	4,556	metal fabricating, wire & cable mfg
112	■	Stroh Brewery	William Henry	1,293e	3,732	beer
113	111	CNC Holding[2]	Jeffrey A Cole	1,282	14,500	specialty retailing
114	89	Delaware North Cos	Jeremy M Jacobs	1,279e	17,500	food svcs, pari-mutuels, typog
115	81	Trammell Crow	J McDonald Williams	1,275e	3,000	real estate develop, mgmt & investment
116	166	•MWC	Mel Whitmire	1,255	900	pharmaceutical wholesaling
117	121	A-Mark Financial	Steven C Markoff	1,250	25	precious metals
118	■	•Del Monte Foods	A Ewan Macdonald	1,230	4,700	food processing
119	165	Tauber Oil	OJ Tauber Jr	1,230	57	petroleum & petroleum marketing
120	151	Raley's	Thomas P Raley	1,225e	8,000	grocery & drug stores
121	61	Scoular Co	Marshall E Faith	1,203	500	grain storing & trading
122	145	Crowley Maritime	Thomas B Crowley	1,200	4,000	maritime transportation
123	90	Furr's	Jan Friederich	1,200e	10,729	grocery stores
124	190	Johnston Coca-Cola Bottling	Summerfield Johnston Jr	1,200e	5,500	soft drinks
125	■	Taubman Co	Robert S Taubman	1,195e	550	real estate development & mgmt
126	128	•Avis	Joseph V Vittoria	1,159	13,000	auto rental
127	■	•TLC Beatrice Intl Holdings	Reginald F Lewis	1,141	5,000	food processing & distributing
128	■	•DiGiorgio	Arthur M Goldberg	1,130	3,000	food distributing
129	155	Clark Enterprises	A James Clark	1,127	5,000	commercial construction, real estate
130	159	First American Bankshares	Jack W Beddow	1,127	6,100	bank holding
131	142	•Tops Markets	Savino P Nanula	1,125	4,296	grocery stores
132	127	Transammonia	Ronald P Stanton	1,124	190	trading fertilizers & petroleum prods
133	124	•Foodmaker	Jack W Goodall Jr	1,119	3,600	Jack in the Box, Chi-Chi's restaurants

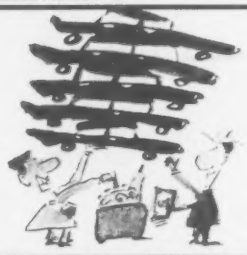
Owners of 71 of these companies also appear on The Forbes Four Hundred list of rich people. Among the private-company billionaires are Jay and Robert Pritzker of Marmon Group, Leonard Stern of Hartz Group and Henry Hillman of the Hillman Co.

134	160	Tishman Realty & Construction	John Tishman	1,110	700	construction mgmt & real estate
135	■	•IBC	Charles A Sullivan	1,105	14,000	mfg & distrib bakery prods
136	154	VT	Cecil Van Tuyl[3]	1,103	3,125	auto, aircraft & boat dealerships
137	117	•Cullum Cos	Jack W Evans	1,100	10,500	grocery & drug stores
138	169	DeMoulas Super Markets	TA DeMoulas	1,100	7,900	grocery stores
139	161	Epic Healthcare Group	Kenn S George	1,100e	11,000	hospitals
140	173	Food Services of America	Thomas J Stewart	1,100e	3,000	food distributor, insurance, real estate
141	130	Perdue Farms	Donald W Mabe	1,100	12,080	poultry processing
142	156	Thrifty Oil	Ted Orden	1,100e	1,275	petroleum, convenience stores
143	154	Gilbane Building	Paul J Choquette Jr	1,086	1,000	commercial & industrial construction
144	140	•Service America	Steven Leipsner	1,085	23,000	food service & vending
145	182	Fidelity Investments	Edward C Johnson 3d	1,083	7,000	mutual fund mgmt, discount brokerage
146	129	•Lear Siegler Seating	Kenneth Way	1,068	8,000	automobile seats

■Not on last year's list. •Went private via leveraged buyout since 1985. e: Estimate. [1]James Richards is co-president. [2]Formerly Cole National. [3]Larry Van Tuyl is co-chief executive.

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
147	120	•Leaseway Transportation	Richard A Damsel	$1,058	13,000	trucking, transportation & related svcs
148	123	Connell Limited Partnership	William F Connell	1,056	3,218	metal fabricating, industrial equip
149	170	•Essex Group	John M Bruce	1,056	3,800	wire, cable & electrical insulation
150	70	•Fort Howard	Donald H DeMeuse	1,053	5,453	paper prods
151	146	E&J Gallo Winery	Ernest Gallo	1,050e	3,000	wine
152	201	Potamkin Manhattan	Victor Potamkin	1,050	2,900	auto dealerships, communications
153	168	GLI Holding[1]	Fred G Currey	1,040	12,700	Greyhound bus lines
154	133	•Kash n' Karry Food Stores	Ronald J Floto	1,038	4,648	grocery stores
155	■	Peter J Schmitt Co	Charles B Barcelona	1,033	4,300	food wholesaling
156	163	•Pueblo International	Harold Toppel	1,028	4,200	grocery stores
157	157	Golden State Foods	James E Williams	1,026	1,700	food processing & distributing for McDonald's
158	153	Schnuck Markets	Craig D Schnuck	1,025e	5,500	grocery stores



Supersalesmen: Jordan Motors, Prospect Motors and Arnold Palmer Automotive show revenues per employee in excess of $1 million—mostly from auto fleet sales.

159	131	Gulf States Toyota	Jerry Pyle	1,022e	930	imports Toyota vehicles
160	185	Science Applications Intl	JR Beyster	1,022	12,000	research & development, systems integration
161	164	Schreiber Foods	Jack Meng	1,020e	2,300	food processing
162	210	•GAF	Samuel J Heyman	1,011	4,542	chemicals, building materials
163	152	Save Mart Supermarkets	Robert Piccinini	1,010	7,300	grocery stores
164	229	PMC	Philip Kamins	1,005	4,500	plastics, specialty chemicals, foam
165	126	•Wickes Lumber	William A Hensler	1,002	5,500	wholesaling & retailing building materials
166	143	Andersen	W Arvid Wellman	1,000	4,000	windows, patio doors
167	144	Chilewich Sons	Simon Chilewich	1,000e	850	commodity trading, cattle, meatpacking
168	104	Connell Co[2]	Grover Connell	1,000	200	heavy equip leasing, food export & import
169	141	Dillingham Construction	Donald K Stager	1,000	1,200	general contracting, construction mgmt
170	147	Grocers Supply Co	Milton Levit	1,000e	1,100	food wholesaling
171	■	•Gulfstream Aerospace	Allen E Paulson	1,000	4,500	aerospace
172	181	Hughes Markets	Roger K Hughes	1,000	5,000	dairy, grocery stores
173	139	•JP Foodservice	James Miller	1,000e	2,300	food distributing
174	149	Lennox International	John W Norris Jr	1,000	7,885	climate control equipment
175	192	Pacific Holding	David H Murdock	1,000e	22,000	real estate, textiles, natural resources
176	137	Sweet Life Foods	Julian Leavitt	1,000	3,000	food wholesaling
177	234	Huntsman Chemical	Jon M Huntsman	985	1,673	chemicals
178	83	John Alden Financial	Glendon E Johnson	969	2,067	insurance
179	158	•LaSalle Energy	Alvin V Shoemaker	963	1,550	natural gas pipeline
180	■	•Chicago North Western Transport	Robert Schmiege	955	8,000	railroad
181	118	Restaurant Enterprises Group	Norman N Habermann	954	23,647	restaurants
182	171	Amerco	Edward J Shoen	951	13,600	U-Haul vehicle rental

■Not on last year's list. •Went private via leveraged buyout since 1985. e: Estimate. [1]In Chapter 11. [2]Formerly Connell Rice & Sugar.

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
183	174	Golub	Lewis Golub	$950	5,000	grocery stores
184	148	•Guardian Industries	William Davidson	950	6,800	flat glass, fiberglass insulation, plastics
185	175	Metallurg	Michael A Standen	950	3,500	metals mining
186	177	Randall's Food Markets	Robert R Onstead	950	2,991	grocery stores
187	178	Eby-Brown Cos	Richard Wake[1]	940	987	candy, tobacco, food & merchandise distrib
188	184	Merchants Distributors	Boyd George	940	3,000	food wholesaling
189	292	SnyderGeneral	Richard W Snyder	931	7,500	air quality control equip
190	206	Brookshire Grocery	Bruce G Brookshire	928e	3,500	grocery stores
191	167	•Levitz Furniture	Robert M Elliott	925	6,711	furniture retailing
192	233	Morse Operations	EJ Morse	916	1,159	auto dealerships
193	172	•Woodward & Lothrop/John Wannamaker	Arnold H Aronson	913	15,000	retailing
194	180	•Kendall Co	RA Gilleland	907	10,000	health care prods

Safeway Inc. had a brief sojourn on the private companies list. KKR took it private in 1986 and then took it public again in April of this year.

195	162	Hartz Group	Leonard Stern	900e	4,000	pet food, real estate, publishing
196	212	Young & Rubicam	Alexander Kroll	900	12,000	advertising, communications
197	275	Oppenheimer Group	Stephen Robert	894	2,800	brokerage, investment banking
198	191	Jordan Co	John W Jordan II	893	9,450	multicompany
199	244	Enterprise Rent-A-Car	Jack Taylor	889	5,241	auto rental & leasing
200	179	•Amsted Industries	Gordon Lohman	883	8,100	RR & industrial equip, bldg materials
201	■	Border Fuel Supply	William Arrington	882	93	petroleum wholesaling
202	227	C&S Wholesale Grocers	Richard B Cohen	880	762	wholesale grocery distributing
203	232	•Parsons	Leonard J Pieroni	879	8,000	engineering, design & construction
204	■	•Earle M Jorgensen Holding	Neven Hulsey	876	3,000	steel prods distributing
205	213	•Super Rite Foods	Alex Grass	876	2,400	grocery stores
206	138	Maritz	William E Maritz	875e	5,500	marketing research & business svcs
207	■	•Sweetheart Holdings	Philip White	858	8,000	paper prods
208	267	Schottenstein Stores	Jerome Schottenstein	850e	12,500	department & furniture stores
209	198	•JPS Textile Group	William J DeBrule	845e	8,783	carpet, elastics, yarn, industrial fabrics
210	197	Holman Enterprises	Joseph S Holman	845	2,179	auto dealerships, parts remanufacturing
211	200	•Harvard Industries	William D Hurley	835	8,850	auto & aerospace equip
212	209	Young's Market	Vernon O Underwood Jr	833	1,200	food & liquor wholesaling
213	204	AppleTree Markets	Arthur L Patch	823	2,324	grocery stores
214	295	JM Petroleum	James C Musselman	816	180	wholesale petroleum, trucking
215	202	•Uniroyal Chemical	Robert J Mazaika	815e	2,800	chemicals & polymers
216	320	Schal Associates	Richard C Halpern	815e	400	construction
217	176	MorningStar Foods	James A Bach	809	4,000	dairy & food processing
218	136	Simpson Investment	William G Reed Jr	800e	2,500	lumber, logging, plywood doors

■Not on last year's list. •Went private via leveraged buyout since 1985. e: Estimate. [1]Thomas Wake is co-president.

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
219	240	Wilbur-Ellis	Brayton Wilbur	$800	1,600	distributing farm supplies & chemicals
220	214	Crown American	Frank J Pasquerilla	788	16,000	department stores, malls, real estate, hotels
221	219	Oklahoma Publishing	Edward L Gaylord	788e	9,000	publishing, broadcasting, entertainment
222	222	Bath Iron Works	William E Haggett	787	11,494	shipbuilding
223	270	Continental Cablevision	Amos B Hostetter Jr	780	7,500	cable broadcasting
224	186	American Protection Industries	Stewart Resnick	778e	4,900	TeleFlora, Franklin Mint
225	135	21 International Holdings[1]	Marshall S Cogan	778e	15,600	automotive parts, home furnishings
226	189	Gillett Holdings	George N Gillett Jr	774	2,118	broadcasting, meatpacking, resorts
227	205	Hunt Corp	Robert C Hunt	774	2,450	general contractor, construction manager
228	224	Johnson & Higgins	Robert V Hatcher Jr	772e	7,800	insurance brokerage, risk mgmt consultant
229	215	•Insilco	Joel L Reed	762	7,300	metal fab, electronics, commun, paints
230	188	84 Lumber	Joseph A Hardy Sr	757	2,700	building materials
231	225	•Kohl's Department Stores	William Kellogg	753	10,000	department stores
232	241	United Van Lines	Maurice Greenblatt	751	950	moving services
233	246	Homeland Stores	Max E Raydon	750	6,700	grocery stores
234	266	JM Huber	George Schenk	750	4,200	natural resources, electronics
235	230	•Pullman	William Turner	750	7,400	transportation equip, auto parts
236	217	•International Controls	David R Markin	744	4,150	truck trailer mfg, auto stamping, insurance
237	195	Hunt Consolidated/Hunt Oil	Ray L Hunt	743e	2,500	oil & gas exploration & refining, marketing
238	290	Jitney-Jungle Stores of America	WH Holman Jr	740	8,000	grocery stores
239	247	Roseburg Forest Products	John J Stephens	738	4,825	forest prods
240	■	HMK Enterprises	Steven E Karol	730	3,377	office furniture, floor covering, steel mfg
241	304	Horsehead Industries	William E Flaherty	728	3,000	zinc, carbon, graphite, environmental svcs
242	239	TRC	Donald N Smith	726	7,400	Friendly's & Perkins Family Restaurants

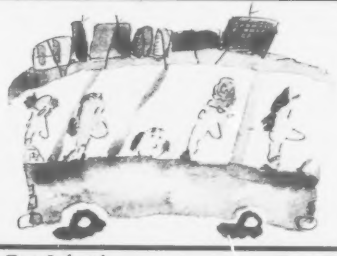
The 13 textile and apparel companies on our private company list have combined revenues of $15 billion. Largest: Levi Strauss, with $3.6 billion.

243	187	Duchossois Industries	Richard L Duchossois	725e	9,000	railroad equip
244	347	Little Caesar Enterprises	Michael Ilitch	725e	11,000	pizza restaurants, sports arenas, pro sports
245	231	Rich Products	Robert E Rich Jr	725	6,000	frozen foods, pro sports, broadcasting
246	228	WWF Paper	Edward V Furlong Jr	724	530	fine-paper distributing
247	258	Gordon Food Service	Paul Gordon	720e	1,600	food distributing
248	■	Horwath International	Robert N Levine	720	12,400	accounting
249	243	Cone Mills	Dewey L Trogdon	715	8,874	textiles
250	203	•Arkansas Best	Robert A Young III	714	9,753	trucking
251	208	•Farm Fresh	Michael E Julian	710	3,300	grocery stores
252	333	Abco Markets	Edward G Hill	708	1,861	grocery stores
253	235	•Ampex	Ronald J Ritchie	708	6,200	tv, broadcast equip, magnetic tape
254	220	Shapell Industries	Nathan Shappell	707	425	land developing, construction
255	251	Sealy[2]	Malcolm Candlish	702e	5,500	mattresses, waterbeds, sofabeds

■Not on last year's list. •Went private via leveraged buyout since 1985. e: Estimate. [1]Formerly Knoll International. [2]Formerly Ohio Mattress.

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
256	256	Coca-Cola Bottling of Chicago	Marvin J Herb	$702e	3,500	soft drinks
257	312	Schneider National	Donald J Schneider	701	8,500	trucking
258	237	Harbert	Raymond J Harbert	700	3,000	commercial construct, real estate devel, oil & gas
259	238	•National Car Rental	Vincent A Wasik	700e	8,700	auto leasing & rental
260	271	Watt Industries	Raymond A Watt	700	600	real estate development & management
261	293	•White Swan	Ronald E Elmquist	700	1,700	food wholesaling
262	242	•S&A Restaurant	Donald J Slater	697	4,500	restaurants
263	226	Exide	Arthur Hawkins	695	5,500	auto & industrial batteries
264	286	•Musicland Group	Jack W Eugster	695	6,800	specialty music stores
265	263	•Big V Supermarkets	David G Bronstein	690e	1,634	grocery stores
266	278	Towers, Perrin	John T Lynch	685	5,000	consulting, reinsurance
267	355	HB Zachry	H Bartell Zachry Jr	685	10,000	general contracting



Three companies on this list are paying a severe price for their LBO debt: Revco, GLI Holding (Greyhound) and Hillsborough Holdings are in Chapter 11. Southland, which runs 7-Eleven, is scheduled to have a bankruptcy hearing in mid-December.

268	260	Tang Industries	Cyrus Tang	683e	3,500	metal fabricating & distributing
269	253	Andersons	Richard P Anderson	680	892	agribusiness, consumer prods
270	264	Drummond Co	Garry N Drummond	676	3,250	coal
271	279	•Mayflower Group	Michael L Smith	676	2,400	moving svcs, bus transportation
272	248	King Kullen Grocery	John B Cullen	675e	2,300	grocery stores
273	334	•Budget Rent a Car	Clifton E Haley	673	7,000	auto & truck leasing
274	390	Prospect Motors	William Halvorson	671	76	auto dealerships, fleet sales
275	252	Brenlin Group	David L Brennan	665	4,200	metal fabricating, steel
276	377	•Catalyst Energy	Tom B Pickens III	665e	1,330	alternative producer of elec & steam energy
277	269	B Green & Co	Bernard Green	665	1,843	food wholesaling, grocery stores
278	373	HCB Contractors	Lawrence A Wilson	664	500	general contracting, construction mgmt
279	■	Charles Pankow Builders	Charles Pankow	656	178	general contracting, construction
280	273	Worldmark	Dean Rhoads	655	1,600	bldg materials, intermediate aluminum prods
281	236	ClubCorp International	Robert H Dedman	654	15,000	athletic & city clubs, resorts, s&L
282	■	AmeriServ	Lenny Pippin	650e	615	food distributing
283	254	Arcata Graphics	Edward L Scarff	650e	7,564	book & magazine printing
284	322	•AutoZone	JR Hyde III	650	7,200	auto parts stores
285	255	Braman Enterprises	Norman Braman	650	825	auto dealerships
286	314	Chase Enterprises	David T Chase	650	5,500	real estate, commun, banking, insurance
287	257	Flying J	O Jay Call	650	3,500	integrated petroleum
288	380	Koll	Donald M Koll	650	1,050	real estate development
289	259	•Mayfair Supermarkets	Stanley P Kaufelt	650	5,300	grocery stores
290	282	McCarthy	Michael M McCarthy	650	650	general contracting, construction mgmt
291	291	McKinsey & Co	Frederick W Gluck	650e	4,000	consulting

■Not on last year's list •Went private via leveraged buyout since 1985 e: Estimate

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
292	283	Minyard Food Stores	Liz Minyard[1]	$650	5,600	grocery stores
293	265	Encyclopaedia Britannica	Robert P Gwinn	649	2,300	reference books, educational svcs
294	249	•AFG Industries	RD Hubbard	648	4,825	flat glass manufacturing
295	311	•DynCorp	Dan Bannister	646	18,000	technical & aviation svcs
296	223	•Tracor	William C Moyer	646e	8,112	defense electronics, engineering
297	297	•Bell & Howell	William J White	641	5,966	publishing, info systems, mail handling equip
298	211	•Lechmere	C George Scala	639	3,500	discount stores
299	274	Inland Group	Daniel I. Goodwin	631	1,200	brokerage & management, investments
300	■	•LPL Technologies	Lawrence J DeGeorge	631	7,338	electronics
301	272	•Ethan Allen	M Farooq Kathwari	630	9,000	furniture, accessories, rugs
302	250	•New Hampshire Oak	Michael D Dingman	630e	3,700	specialty chemicals & auto prods
303	221	•Horace Mann Educators	Paul J Kardos	630	822	insurance
304	■	•Jerrico	Clinton A Clark	627	17,000	Long John Silver restaurants
305	296	Hendrick Management	JR Hendrick III	627	1,550	auto dealerships, sportswear, motorsports
306	305	GSC Enterprises	Michael K McKenzie	623	1,400	food wholesaling
307	■	International Data Group	Patrick J McGovern	620e	3,812	information technology svcs
308	280	Marley	Robert J Dineen	620	4,700	cooling towers, boilers, pumps
309	294	Battelle Memorial Institute	Douglas E Olesen	615	7,477	research & development
310	289	WL Gore & Associates	Robert W Gore	615e	5,200	Gore-Tex fabrics, electronics, ind & med prods
311	318	North Pacific Lumber	TJ Tomjack	610	380	forest, agriculture & steel prods wholesaling
312	216	Associated Metals & Min	Stefan E Eliel	600	201	steel & metal trading
313	298	LL Bean	Leon A Gorman	600	3,200	outdoor sporting goods retailing & marketing
314	261	•Jim Walter	Dennis M Ross	600	3,000	building materials, water transmission
315	351	Warren Equities	Warren Alpert	600	1,800	petroleum prods, convenience stores

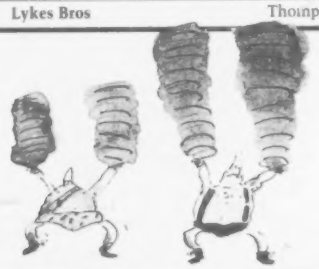
The 33 private supermarket chains on this list own more than 3,200 stores and have combined revenues of $50 billion.

316	313	American Foods Group	Carl Kuehne	596	1,592	meatpacking
317	276	•Edgcomb	Bernard Serin	596	1,650	steel service centers
318	337	Racetrac Petroleum	Carl Bolch Jr	594	2,148	convenience stores, gasoline retailing
319	300	Barton-Malow Enterprises	Ben C Maibach III	586	1,200	construction mgmt, general contracting
320	336	MA Mortenson	MA Mortenson Jr	581	1,590	general contracting, construct mgr, design
321	■	Jordache Enterprises	J Nakash	580	3,000	apparel
322	■	Georgetown Industries	Roger R Regelbrugge	579	2,977	building materials
323	218	•Lear Siegler	William J Turner	575	6,000	industrial equip, materials handling
324	310	UIS	Harry Lebensfeld	573	6,300	auto parts
325	302	MediaNews Group	W Dean Singleton	572e	5,997	newspapers
326	■	•Silgan	R Phillip Silver	571	3,650	steel, aluminum & plastic containers
327	326	Coca-Cola Bottling Co of NY	James Maloney	567e	3,000	soft drink bottling
328	284	Hensel Phelps Construction[2]	Jerry L Morgensen	564	2,200	commercial construction

■Not on last year's list. •Went private via leveraged buyout since 1985. e: Estimate. [1]Gretchen Minyard is co-chairperson. [2]Formerly Phelps Construction.

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
329	330	•Joy Technologies	Marc F Wray	$563	4,200	mining & industrial equipment
330	327	Coulter Electronics	Wallace H Coulter	562e	4,800	medical & electronic equipment
331	321	•Morse Shoe	Manuel Rosenberg	562	5,400	shoes
332	■	Jordan Motors	Jordan Kapson	561	150	auto dealerships
333	281	ICC Industries	John J Farber	556	1,200	chemicals
334	369	Humiston-Keeling	Burton H Olin	552	191	wholesale drug distributing
335	343	Asplundh Tree Expert	Edward K Asplundh	550	14,000	tree trimming for elec utilities
336	287	Bartlett & Co	Paul D Bartlett Jr	550	525	grain, flour, cattle feeding
337	■	Crawford Fittings	FJ Callahan	550e	255	valves, pipe fittings
338	285	Irvine Co	Donald Bren	550	350	real estate development
339	359	Menasha	WH Drew	545	4,000	packaging, printing, plastics, forest prods
340	301	Lykes Bros	Thompson L Rankin	545e	3,000	food processing, insurance



Combined revenues of these 400 companies: $609 billion. Combined revenues of the 400 largest public companies: $3.1 trillion.

341	332	Rock-Tenn	A Worley Brown	542e	4,500	paperboard & packaging prods
342	363	Lusk Co	John D Lusk	541	833	residential construction
343	342	Aarque Cos	R Quintus Anderson	540e	2,700	metal fabricating
344	345	Chemcentral	H Daniel Wenstrup	540	775	chemical distributing
345	393	DiFeo Automotive Network	Sam DiFeo	537	1,208	auto dealerships
346	340	Georgia Crown Distributing	Donald M Leebern Jr	535e	600	beverage distributing
347	309	Hall-Mark Electronics	Joseph W Semmer	535	1,200	electronic components, computer systems
348	324	•Florida Steel	Edward Flom	535	2,300	steel manufacturing & marketing
349	■	Topa Equities Ltd	John E Anderson	530	1,425	insurance, financial svcs, beverage distrib
350	339	Alling & Cory	Samuel T Hubbard Jr	528	1,150	paper, packaging & business prods
351	338	Walton Monroe Mills	G Stephen Felker	528	5,000	textiles
352	325	CC Industries	Neele E Stearns	525	6,025	home furnishings, paper, real estate devel
353	■	MTD Products	Curtis E Moll	525e	5,000	outdoor power equipment
354	319	Placid Oil	Walter Fraker	525e	750	oil & gas exploration
355	353	Wheaton Inds	Robert I Veghte	525e	10,000	glass & plastic containers
356	362	•Envirodyne Industries	Donald P Kelly	523	4,800	sausage casings, plastics
357	368	Day & Zimmermann	Harold L Yoh Jr	523	12,300	engineering, consult, bus svcs, real est
358	346	Lewis Homes Group	Richard A Lewis	522e	950	home building, real estate development
359	372	Wawa	Richard D Wood Jr	521	2,100	convenience stores
360	357	Halstead Industries	William B Halstead	519e	2,400	copper tubing
361	262	•Warnaco	Linda J Wachner	516	10,600	apparel
362	335	Dr Pepper/Seven-Up Cos	John R Albers	514	868	soft drinks
363	341	•PIE Nationwide	Gerald McIntyre	513	7,800	trucking
364	394	Alamo Rent A Car	Michael S Egan	510	4,000	car rental

■Not on last year's list •Went private via leveraged buyout since 1985 e: Estimate

The 400 Largest Private Companies in the U.S.

Rank this year	Rank last year	Company	Chief executive	Revenues ($mil)	Employees	Business
365	■	WB Johnson Properties	William B Johnson	$510	10,000	Ritz Carlton hotels, restaurants
366	356	Esstar	Robert A Haversat Sr	506	4,000	building materials, electric tools
367	361	Ruffin Cos	Phil G Ruffin	503	800	petrol trading, convenience strs, handtrucks
368	■	Arcadian	R James Komeaux	500	1,150	fertilizers & industrial chemicals
369	344	Bacardi Imports	Juan Grau	500	280	distilled spirits & wine
370	384	Booz, Allen & Hamilton	R Michael McCullough	500	4,100	management & technology consulting
371	■	•Elder-Beerman Stores	Max Gutmann	500e	8,086	department stores
372	■	Guess ?	Georges Marciano	500	1,300	apparel
373	■	Haggar Apparel	JM Haggar Jr	500e	7,000	apparel
374	386	Haworth	Richard G Haworth	500e	3,600	office furniture
375	348	Mennen	L Donald Horne	500	3,000	personal care prods
376	■	Morse Diesel International	Donald H Piser	500	550	construction, consulting

Private entertainment: The more than 600 record and video stores owned by Minneapolis-based Musicland Group produce revenues of $695 million.

377	■	Parsons & Whittemore	Arthur Schwartz	500	1,500	pulp & paper
378	■	S&P Co	Lutz Isslieb	500e	3,000	Pabst, Falstaff & Pearl beers, real estate
379	■	•Sunshine Biscuits	Wilfred Uytengsu	500	3,500	biscuits
380	■	Titan Industrial	Michael S Levin	500	300	steel marketing
381	■	Treasure Chest Advertising	Sanford G Scheller	500	3,200	printing circulars
382	352	Washington Corp	Dennis Washington	500	3,300	heavy construct, mining, public utilities
383	306	Whiting-Turner Contracting	W Hackerman	500	1,250	general contracting & construction manager
384	■	Sverdrup	Brice R Smith Jr	498	5,100	engineering, architec, construct, aero, real est
385	■	Dillard Paper	Geoffry A Clark	495	1,750	wholesaling paper & plastic prods
386	378	Austin Industries	William T Solomon	493	6,000	general contracting, construct, engineering
387	■	Pepper Cos	Richard S Pepper	492	1,200	general contractors
388	■	Arnold Palmer Automotive Group	James O'Neal Jr	491	357	auto dealerships, fleet sales
389	■	Sierra Pacific Industries	AA Emmerson	490	2,500	lumber
390	■	QuikTrip	Chester Cadieux	489	1,921	convenience stores, retail gasoline
391	307	McLouth Steel	Edward L Sambuchi	487	2,200	steel
392	■	Leo Burnett	Hall Adams Jr	487	5,675	advertising
393	366	Rosenthal Cos	Robert M Rosenthal	486	1,306	auto dealerships
394	■	Walbridge, Aldinger	John Rakolta Jr	486	750	general contracting, construct & program mgmt
395	371	United Co	James W McGlothlin	485	1,175	coal, oil, gas, real estate, financial svcs
396	■	Freedom Newspapers	DR Segal	483e	5,200	publishing, tv
397	364	ER Carpenter	Stanley F Pauley	480	7,800	polyurethane foam
398	■	Rugby-Darby Group Cos	Michael Ashkin	480e	2,200	generic drugs
399	■	McJunkin	HB Wehrle III	479	1,200	distrib piping, electrical equip
400	358	•Bibb	Thomas C Foley	475	7,100	home furnishings

■Not on last year's list •Went private via leveraged buyout since 1985 e: Estimate

Where to Find the 400 Largest U.S. Private Companies

The alphabetical listing below cross-references the sales ranking that begins on page 226. For those companies taken private since 1985, we give the year of the transaction.

Company	Rank
A-Mark Financial 100 Wilshire Boulevard Santa Monica, CA 90401 213-319-0200	117
Abco Markets 3001 West Indian School Road Phoenix, AZ 85017 602-222-1600	252
AFG Industries (1988) 301 Commerce Street, Suite 3300 Fort Worth, TX 76102 817-332-5006	294
ARA Services The ARA Tower, 1101 Market Street Philadelphia, PA 19107 215-238-3000	18
Aarque Cos PO Box 310 Jamestown, NY 14701 716-664-6014	343
Advance Publications 950 Fingerboard Road Staten Island, NY 10305 718-981-1234	36
Alamo Rent A Car PO Box 2276, 110 SE 6th Street Fort Lauderdale, FL 33335 305-522-0000	364
Alco Health Services (1989) PO Box 959 Valley Forge, PA 19482 215-296-4480	51
John Alden Financial 7300 Corporate Center Drive Miami, FL 33126 305-470-3100	178
Alling & Cory 25 Verona Street Rochester, NY 14608 716-454-1880	350
Amerco 1325 Airmotive Way, Suite 170 Reno, NV 89502 702-786-0488	182
AmeriServ 13355 Noel Road, Suite 2225 Dallas, TX 75240 214-385-8595	282
American Financial One East 4th Street Cincinnati, OH 45202 513-579-2121	8
American Foods Group 544 Acme Street Green Bay, WI 54308 414-437-6330	316
American Protection Industries 12233 W Olympic Blvd, Suite 380 Los Angeles, CA 90064 213-442-5700	224
American Standard (1988) 1114 Sixth Avenue, 19th Floor New York, NY 10036 212-703-5100	31
Ampex (1987) 401 Broadway Redwood City, CA 94063 415-367-4150	253
Amsted Industries (1986) 205 North Michigan Avenue Chicago, IL 60601 312-645-1700	200
Amway 7575 East Fulton Road Ada, MI 49355 616-676-6000	78
Andersen 100 Fourth Avenue North Bayport, MN 55003 612-439-5150	166
Arthur Andersen 1345 Sixth Avenue New York, NY 10105 212-708-4000	24
Andersons 1200 Dussel Drive Maumee, OH 43537 419-893-5050	269
Anschutz 555 17th Street, Suite 2400 Denver, CO 80202 303-298-1000	43
AppleTree Markets 4301 Windfern Lane Houston, TX 77041 713-460-5000	213

Where to Find the 400 Largest U.S. Private Companies

Company	Rank
Arcadian 6750 Poplar Avenue, Suite 600 Memphis, TN 38138 901-758-5200	368
Arcata Graphics 601 California Street, Suite 1800 San Francisco, CA 94108 415-781-4200	283
Arkansas Best (1988) 1000 South 21st Street Fort Smith, AR 72901 501-785-6000	250
Asplundh Tree Expert Blair Mill Road Willow Grove, PA 19090 215-784-4200	335
Associated Metals & Minerals Three North Corporate Park Drive White Plains, NY 10604 914-251-5400	312
Astroline 95 Walkers Brook Drive Reading, MA 01867 617-942-1600	50
Austin Industries PO Box 1590 Dallas, TX 75221 214-630-5100	386
AutoZone (1988) 3030 Poplar Avenue Memphis, TN 38111 901-325-4600	284
Avis (1986) 900 Old Country Road Garden City, NY 11530 516-222-3000	126
Bacardi Imports 2100 Biscayne Boulevard Miami, FL 33137 305-573-8511	369
Bartlett & Co 4800 Main Street, Suite 600 Kansas City, MO 64112 816-753-6300	336
Barton-Malow Enterprises 27777 Franklin Road, Suite 800 Southfield, MI 48034 313-351-4500	319
Bath Iron Works 700 Washington Street Bath, ME 04530 207-443-3311	222
Battelle Memorial Institute 505 King Avenue Columbus, OH 43201 614-424-6424	309
LL Bean Casco Street Freeport, ME 04033 207-865-4761	313
Bechtel Group PO Box 193965 San Francisco, CA 94119 415-768-1234	15
BeefAmerica 5600 Harry Anderson Avenue Omaha, NE 68137 402-397-2000	83
Belk Brothers 2801 West Tyvola Road Charlotte, NC 28217 704-357-1000	56
Bell & Howell (1988) 5215 Old Orchard Road Skokie, IL 60077 708-470-7100	297
Best Products (1988) PO Box 26303 Richmond VA 23260 804-261-2000	61
Bibb (1985) 237 Coliseum Drive Macon, GA 31208 912-752-6700	400
Big V Supermarkets (1987) 176 North Main Street Florida, NY 10921 914-651-4411	265
Booz, Allen & Hamilton 101 Park Avenue New York, NY 10178 212-697-1900	370
Border Fuel Supply 6400 S Fiddler's Green Circle, Suite 800 Engelwood, CO 80111 303-770-1600	201
Borg-Warner (1987) 200 South Michigan Avenue Chicago, IL 60604 312-322-8500	53
Braman Enterprises 2800 Biscayne Boulevard Miami, FL 33137 305-576-2051	285
Brenlin Group 670 West Market Street Akron, OH 44303 216-762-2420	275
Brookshire Grocery PO Box 1411 Tyler, TX 75710 214-534-3000	190
Budget Rent a Car (1989) 200 North Michigan Avenue Chicago, IL 60601 312-580-5000	273
Burlington Industries (1987) 3330 West Friendly Avenue Greensboro, NC 27410 919-379-2000	57
Leo Burnett 35 West Wacker Drive Chicago, IL 60601 312-220-5959	392
C&S Wholesale Grocers Old Ferry Road Brattleboro, VT 05301 802-257-4371	202
CC Industries 222 North LaSalle Street Chicago, IL 60601 312-855-4000	352
CNC Holding 5915 Landerbrook Drive Cleveland, OH 44124 216-449-4100	113
Cargill PO Box 9300 Minneapolis, MN 55440 612-475-7575	1
Carlson Coe Carlson Parkway, PO Box 59159 Minneapolis, MN 55459 612-540-5000	82
ER Carpenter PO Box 27205 Richmond, VA 23261 804-359-0800	397
Catalyst Energy (1988) 245 Park Avenue, 35th Floor New York, NY 10167 212-826-8600	276
Charter Medical (1988) 577 Mulberry Street Macon, GA 31298 912-742-1161	70
Chase Enterprises One Commercial Plaza Hartford, CT 06103 203-549-1674	286
Chemcentral 7050 West 71st Street Chicago, IL 60638 312-594-7000	344
Chicago North Western Trans (1989) One North Western Center Chicago, IL 60606 312-993-1952	180

Where to Find the 400 Largest U.S. Private Companies

Company	Rank
Chilewich Sons 12 Water Street White Plains, NY 10601 914-997-2000	167
Clark Enterprises 7500 Old Georgetown Road Bethesda, MD 20814 301-657-7100	129
ClubCorp International 3030 LBJ Freeway Dallas, TX 75234 214-243-6191	281
Coca-Cola Bottling Co of Chicago 7400 North Oak Park Avenue Chicago, IL 60648 312-775-0900	25
Coca-Cola Bottling Co of NY 20 Horseneck Lane Greenwich, CT 06830 203-625-4000	327
Coltec Industries (1988) 430 Park Avenue New York, NY 10022 212-940-0400	87
Cone Mills 1201 Maple Street Greensboro, NC 27405 919-379-6220	249
Connell Co 45 Cardinal Drive Westfield, NJ 07090 201-233-0700	168
Connell Limited Partnership One International Place, 31st Floor Boston, MA 02110 617-737-2700	148
Continental Cablevision The Pilot House, Lewis Wharf Boston, MA 02110 617-742-9500	223
Continental Grain 277 Park Avenue New York, NY 10172 212-207-5100	3
Coopers & Lybrand 1301 Sixth Avenue New York, NY 10020 212-536-2000	25
Coulter Electronics 600 Coulter Way Hialeah, FL 33010 305-885-0131	330
Cox Enterprises PO Box 105357 Atlanta, GA 30348 404-843-5123	69
Crawford Fittings 2955 Solon Road Solon, OH 44139 216-248-4600	337
Crowley Maritime 155 Grand Avenue Oakland, CA 94612 415-251-7500	122
Crown American Pasquerilla Plaza Johnstown, PA 15907 814-536-4441	220
Cullum Cos (1988) 14303 Inwood Road Dallas, TX 75244 214-661-9700	137
Cumberland Farms 777 Dedham Street Canton, MA 02021 617-828-4900	108
DHL Worldwide Express 333 Twin Dolphin Drive Redwood City, CA 94065 415-593-7474	71
Day & Zimmermann 1818 Market Street Philadelphia PA 19103 215-299-8000	357
Edward J DeBartolo 7620 Market Street Youngstown, OH 44512 216-758-7292	103
DeMoulas Super Markets 875 East Street Tewksbury, MA 01876 508-851-7381	138
Del Monte Foods (1990) One Market Plaza San Francisco, CA 94105 415-442-4000	118
Delaware North Cos One Delaware North Place Buffalo, NY 14202 716-858-5000	114
Deloitte & Touche 10 Westport Road Wilton, CT 06897 203-761-3000	27
DiFeo Automotive Network 947 Communipaw Avenue Jersey City, NJ 07304 201-451-3111	345
DiGiorgio (1990) Two Executive Drive Somerset, NJ 08873 908-469-4444	128
Dillard Paper PO Box 21767 Greensboro, NC 27420 919-299-1211	385
Dillingham Construction 5960 Inglewood Drive Pleasanton, CA 94588 415-463-3300	169
Dr Pepper/Seven-Up Cos 8144 Walnut Hill Lane Dallas, TX 75231 214-360-7000	362
Dominick's Finer Foods 505 Railroad Avenue Northlake, IL 60164 708-562-1000	65
Domino's Pizza 30 Frank Lloyd Wright Drive Ann Arbor, MI 48106 313-930-3030	80
Drummond Co PO Box 1549 Jasper, AL 35501 205-387-0501	270
Duchossois Industries 845 Larch Avenue Elmhurst, IL 60126 708-279-3600	243
Dunavant Enterprises PO Box 443 Memphis, TN 38101 901-369-1500	110
Duracell Holdings Berkshire Industrial Park Bethel, CT 06801 203-796-4000	107
DynCorp (1988) 2000 Edmund Halley Drive Reston, VA 22091 703-264-0330	295
Dyson-Kissner-Moran 230 Park Avenue New York, NY 10169 212-661-4600	30
Eby-Brown Cos 1001 Sullivan Road Aurora, IL 60507 708-897-8674	187
Jack Eckerd (1986) PO Box 4689 Clearwater, FL 34618 813-397-7461	32
Edgcomb (1989) 555 State Road Bensalem, PA 19020 215-245-3361	317

Where to Find the 400 Largest U.S. Private Companies

Company	Rank
84 Lumber PO Box 8484 Eighty Four, PA 15384 412-228-8820	230
Elder-Beerman Stores (1987) 3155 El-Bee Road Dayton, OH 45439 513-296-2700	371
Encyclopaedia Britannica 310 South Michigan Avenue Chicago, IL 60604 312-347-7000	293
Enterprise Rent-A-Car 8850 Ladue Road St Louis, MO 63124 314-863-7000	199
Envirodyne Industries (1989) 701 Harger Road Oakbrook, IL 60521 708-571-8800	356
Epic Healthcare Group PO Box 650398 Dallas, TX 75265 214-869-0707	139
Ernst & Young 277 Park Avenue New York, NY 10172 212-830-6000	16
Essex Group (1988) PO Box 1601 Fort Wayne, IN 46801 219-461-4000	149
Esstar 555 Long Wharf Drive, Suite 12 New Haven, CT 06511 203-777-2274	366
Estée Lauder Cos 767 Fifth Avenue New York, NY 10153 212-572-4200	60
Ethan Allen (1989) Ethan Allen Drive Danbury, CT 06811 203-743-8000	301
Exide PO Box 14205 Reading, PA 19612 215-378-0500	263
Farley 233 South Wacker Drive, Suite 6300 Chicago, IL 60606 312-876-7000	85
Farm Fresh (1988) 7530 Tidewater Drive Norfolk, VA 23505 804-480-6700	251
Fidelity Investments 82 Devonshire Street Boston, MA 02109 617-570-7000	145
Finevest Services 165 Mason Street Greenwich, CT 06830 203-629-8750	55
First American Bankshares First Amer Bank Bldg, 15 & H Sts, NW Washington, DC 20005 202-383-1414	130
Florida Steel (1988) PO Box 31328 Tampa, FL 33631 813-251-8811	348
Flying J PO Box 678 Brigham City, UT 84302 801-734-9416	287
Food Services of America 18340 East Valley Highway Kent, WA 98032 206-251-9100	140
Foodmaker (1988) PO Box 783 San Diego, CA 92112 619-571-2121	133
Fort Howard (1988) PO Box 19130 Green Bay, WI 54307 414-435-8821	150
Frank Consolidated Enterprises 666 Garland Place Des Plaines, IL 60016 708-699-7000	106
Freedom Newspapers 17666 Fitch Irvine, CA 92714 714-553-9292	396
Furr's PO Box 1650 Lubbock, TX 79408 806-763-1931	123
GAF (1989) 1361 Alps Road Wayne, NJ 07470 201-628-3000	162
GLI Holding 901 Main Street, Suite 2400 Dallas, TX 75202 214-744-6500	153
GSC Enterprises PO Box 638 Sulphur Springs, TX 75482 214-885-7621	306
E&J Gallo Winery PO Box 1130 Modesto, CA 95353 209-579-3111	151
Gates PO Box 5887 Denver, CO 80217 303-744-1911	109
General Instrument (1990) 767 Fifth Avenue, 45th Floor New York, NY 10153 212-207-6200	98
Georgetown Industries 1901 Roxborough Road Charlotte, NC 28211 704-366-6901	322
Georgia Crown Distributing PO Box 7908 Columbus, GA 31908 404-568-4580	346
Giant Eagle 101 Kappa Drive Pittsburgh, PA 15238 412-963-6200	77
Gilbane Building 7 Jackson Walkway Providence, RI 02940 401-456-5800	143
Gillett Holdings 555 17th Street, Suite 3300 Denver, CO 80202 303-476-4030	226
Global Petroleum 800 South Street Waltham, MA 02154 617-894-8800	79
Golden State Foods 234 E Colorado Boulevard, Suite 800 Pasadena, CA 91101 818-793-3135	157
Goldman, Sachs 85 Broad Street New York, NY 10004 212-902-1000	19
Golodetz 666 Fifth Avenue New York, NY 10103 212-581-2400	97
Golub PO Box 1074 Schenectady, NY 12301 518-355-5000	183
Gordon Food Service PO Box 1787 Grand Rapids, MI 49501 616-530-7000	247

Where to Find the 400 Largest U.S. Private Companies

Company	Rank
WL Gore & Associates 555 Papermill Road Newark, DE 19711 302-738-4880	310
Grand Union (1988) 201 Willowbrook Boulevard Wayne, NJ 07470 201-890-6000	37
Graybar Electric PO Box 7231 St Louis, MO 63177 314-727-3900	74
B Green & Co 3601 Washington Boulevard Baltimore, MD 21227 301-247-8300	277
Grocers Supply Co PO Box 14200 Houston, TX 77221 713-747-5000	170
Guardian Industries (1985) 43043 West Nine Mile Road Northville, MI 48167 313-347-0100	184
Guess? 1444 South Alameda Street Los Angeles, CA 90021 213-765-3100	372
Gulf States Toyota PO Box 40306 Houston, TX 77240 713-744-3300	159
Gulfstream Aerospace (1990) PO Box 2206 Savannah, GA 31402 912-964-3000	171
H Group Holdings 200 West Madison Street, 39th Floor Chicago, IL 60606 312-750-1234	40
HCB Contractors 1400 Elm Street, Suite 4600 Dallas, TX 75202 214-747-8541	278
HEB Grocery 646 South Main Avenue San Antonio, TX 78204 512-270-8000	39
HMK Enterprises 800 South Street Waltham, MA 02154 617-891-6660	240
Haggar Apparel 6113 Lemmon Avenue Dallas, TX 75209 214-352-8481	373
Hall-Mark Electronics 11333 Pagemill Road Dallas, TX 75243 214-343-5000	347
Hallmark Cards PO Box 419580 Kansas City, MO 64141 816-274-5111	46
Halstead Industries 300 North Greene Street, Suite 400 Greensboro, NC 27401 919-272-1966	360
Harbert PO Box 1297 Birmingham, AL 35201 205-987-5500	258
Hartz Group 667 Madison Avenue New York, NY 10021 212-308-3336	195
Harvard Industries (1988) PO Box 527 Farmingdale, NJ 07727 201-938-9000	211
Haworth One Haworth Center Holland, MI 49423 616-393-3000	374
HealthTrust (1987) 4525 Harding Road Nashville, TN 37215 615-383-4444	76
Hearst 959 Eighth Avenue New York, NY 10019 212-649-2000	59
Helmsley Enterprises 60 East 42nd Street New York, NY 10165 212-687-6400	92
Hendrick Management PO Box 18649 Charlotte, NC 28218 704-568-5550	305
Hensel Phelps Construction PO Box 2440 Greeley, CO 80632 303-352-6565	328
Hertz 225 Brae Boulevard Park Ridge, NJ 07656 201-307-2486	54
Hillman Co 2000 Grant Building Pittsburgh, PA 15219 412-281-2620	84
Hillsborough Holdings (1988) 1500 North Dale Mabry Highway Tampa, FL 33607 813-871-4811	99
Holiday Cos PO Box 1224 Minneapolis, MN 55440 612-830-8700	95
Holman Enterprises 7411 Maple Avenue Pennsauken, NJ 08109 609-663-5200	210
Homeland Stores PO Box 25008 Oklahoma City, OK 73125 405-557-5500	233
Hook-SupeRx 175 Tricounty Parkway Cincinnati, OH 45246 513-782-3000	75
Horace Mann Educators (1989) One Horace Mann Plaza Springfield, IL 62715 217-789-2500	303
Horsehead Industries 110 East 59th Street New York, NY 10022 212-527-3000	241
Horwath International 1845 Walnut Street Philadelphia, PA 19103 215-299-1700	248
Hospital Corp of America (1989) One Park Plaza Nashville, TN 37203 615-327-9551	22
JM Huber 333 Thornall Street Edison, NJ 08818 201-549-8600	234
Hughes Markets 2716 San Fernando Road Los Angeles, CA 90065 213-227-8211	172
Humiston-Keeling 233 East Erie Street, Suite 200 Chicago, IL 60611 312-943-6066	334
Hunt Consolidated/Hunt Oil 1445 Ross at Field Dallas, TX 75202 214-978-8000	237
Hunt Corp PO Box 128 Indianapolis, IN 46206 317-241-6301	227

Where to Find the 400 Largest U.S. Private Companies

Company	Rank
Huntsman Chemical 2000 Eagle Gate Tower Salt Lake City, UT 84111 801-532-5200	177
Hy-Vee Food Stores 1801 Osceola Avenue Chariton, IA 50049 515-774-2121	66
IBC (1988) 12 East Armour Boulevard Kansas City, MO 64111 816-561-6600	135
ICC Industries 720 Fifth Avenue New York, NY 10019 212-903-1700	333
Ingram Industries 4400 Harding Road Nashville, TN 37205 615-298-8200	41
Inland Group 2901 Butterfield Road Oak Brook, IL 60521 708-218-8000	299
Insilco (1988) 300 North Marienfeld, Suite 400 Midland, TX 79702 915-684-4411	229
International Controls (1989) 2016 North Pitcher Street Kalamazoo, MI 49007 616-343 6121	236
International Data Group One Exeter Plaza, 15th Floor Boston, MA 02116 617-534-1200	307
Irvine Co 550 Newport Center Drive Newport Beach, CA 92660 714-720-2000	338
JM Family Enterprises 100 Northwest 12th Avenue Deerfield Beach, FL 33442 305-429-2000	58
JM Petroleum 2500 Allianz Financial Center, Box 185 Dallas, TX 75201 214-953-0330	214
JMB Realty 900 North Michigan Avenue Chicago, IL 60611 312-915-1987	24
JP Foodservice (1989) 7250 Parkway Drive, Suite 300 Hanover, MD 21076 301-796-5617	173
JPS Textile Group (1988) 555 North Pleasant Bird Dr, Suite 202 Greenville, SC 29607 803-271-9919	209
Jerrico (1989) 101 Jerrico Drive Lexington, KY 40579 606-263-6000	304
Jitney-Jungle Stores of America PO Box 3409 Jackson, MS 39207 601-948-0361	238
Johnson & Higgins 125 Broad Street New York, NY 10004 212-574-7000	228
SC Johnson Wax 1525 Howe Street Racine, WI 53403 414-631-2000	33
WB Johnson Properties 3414 Peachtree Road NE, Suite 300 Atlanta, GA 30326 404-237-5500	365
Johnston Coca-Cola Bottling One Union Square, Suite 600 Chattanooga, TN 37402 615-756-0252	124
Jordache Enterprises 226 West 37th Street New York, NY 10018 212-643-8500	321
Jordan Co 315 Park Avenue South, 20th Floor New York, NY 10010 212-460-1915	198
Jordan Motors 609 East Jefferson Boulevard Mishawaka, IN 46545 219-259-1981	332
Earle M Jorgensen Holding (1990) 10700 Alameda Street Lynwood, CA 90262 213-567-1122	204
Joy Technologies (1987) 301 Grant Street Pittsburgh, PA 15219 412-562-4500	329
KPMG 767 Fifth Avenue New York, NY 10153 212-909-5000	17
Kash n' Karry Food Stores (1988) 6422 Harney Road Tampa, FL 33610 813-621-0200	154
Kendall Co (1988) 15 Hampshire Street Mansfield, MA 02048 508-261-8000	194
Peter Kiewit Sons' 1000 Kiewit Plaza Omaha, NE 68131 402-342-2052	21
King Kullen Grocery 1194 Prospect Avenue Westbury, NY 11590 516-333-7100	272
21 International Holdings 153 East 53rd Street, Suite 5900 New York, NY 10022 212-230-0400	225
Koch Industries 4111 East 37th Street North Wichita, KS 67220 316-832-5500	2
Kohl's Department Stores (1986) N54 W13600 Woodale Drive Menomonee Falls, WI 53051 414-783-5800	231
Kohler 444 Highland Drive Kohler, WI 53044 414-457-4441	105
Koll 4343 Von Karman Avenue Newport Beach, CA 92660 714-833-3030	288
LPL Technologies (1990) 358 Hall Avenue Wallingford, CT 06492 203-265-8601	300
LaSalle Energy (1987) PO Box 1478 Houston, TX 77002 713-229-4123	179
Lear Siegler (1987) 220 South Orange Avenue Livingston, NJ 07039 201-535-9522	323
Lear Siegler Seating (1988) 21557 Telegraph Road Southfield, MI 48034 313-746-1500	146
Leaseway Transportation (1987) 3700 Park East Drive Cleveland, OH 44122 216-765-5500	147
Lechmere (1989) 275 Wildwood Street Woburn, MA 01801 617-935-8320	298

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Company	Rank
Lefrak Organization 97-77 Queens Boulevard Rego Park, NY 11374 718-459-9021	38
Lennox International PO Box 7999000 Dallas, TX 75379 214-497-5000	174
Levi Strauss & Co (1985) 1155 Battery Street San Francisco, CA 94111 415-544-6000	28
Levitz Furniture (1985) 6111 Broken Sound Parkway NW Boca Raton, FL 33487 407-994-6006	191
Lewis Homes Group PO Box 670 Upland, CA 91785 714-985-0971	358
Lincoln Property 500 North Akard, Suite 3300 Dallas, TX 75201 214-740-3300	72
Little Caesar Enterprises 2211 Woodward Avenue Detroit, MI 48201 313-983-6000	244
Lusk Co 17550 Gillette Avenue Irvine, CA 92714 714-757-6000	342
Lykes Bros 215 Madison Street Tampa, FL 33602 813-223-3981	340
William Lyon Cos 4490 Von Karman Avenue Newport Beach, CA 92660 714-833-3600	90
MTD Products 5965 Grafton Road Valley City, OH 44280 216-225-2600	353
MWC (1988) 81 Blue Ravine Road Folsom, CA 95630 916-985-5180	116
MacAndrews & Forbes Holdings 36 East 63rd Street New York, NY 10021 212-688-9000	13
RH Macy (1986) 151 West 34th Street New York, NY 10001 212-695-4400	9
Maritz 1375 North Highway Drive Fenton, MO 63099 314-827-4000	206
Marley 1900 Shawnee Mission Parkway Mission Woods, KS 66205 913-362-5440	308
Marmon Group 225 West Washington Street Chicago, IL 60606 312-372-9500	26
Mars 6885 Elm Street McLean, VA 22101 703-821-4900	7
Mayfair Supermarkets (1989) 681 Newark Avenue Elizabeth, NJ 07208 201-352-6400	289
Mayflower Group (1986) PO Box 107 Indianapolis, IN 46206 317-875-1000	271
McCarthy 1341 North Rock Hill Road St Louis, MO 63124 314-968-3300	290
McJunkin PO Box 513 Charleston, WV 25322 304-348-5211	399
McKinsey & Co 55 East 52nd Street New York, NY 10022 212-446-7000	291
McLane 4747 McLane Parkway Temple, TX 76503 817-771-7500	42
McLouth Steel 1650 West Jefferson Trenton, MI 48183 313-246-4002	391
MediaNews Group 4888 Loop Central Drive, Suite 525 Houston, TX 77081 713-295-3800	325
Meijer 2929 Walker, NW Grand Rapids, MI 49504 616-453-6711	52
Menasha PO Box 367 Neenah, WI 54957 414-751-1000	339
Mennen Hanover Avenue Morristown, NJ 07960 201-631-9000	375
Merchants Distributors PO Box 800 Hickory, NC 28603 704-323-4100	188
Metallurg 25 East 39th Street New York, NY 10016 212-686-4010	185
Metromedia One Harmon Plaza Secaucus, NJ 07096 201-348-3244	44
Milliken & Co PO Box 1926 Spartanburg, SC 29304 803-573-2020	47
Minyard Food Stores PO Box 518 Coppell, TX 75019 214-393-8700	292
Montgomery Ward & Co (1988) One Montgomery Ward Plaza Chicago, IL 60671 312-467-2000	14
MorningStar Foods 5956 Sherry Lane, Suite 1100 Dallas, TX 75225 214-360-4700	217
Morse Diesel International 1515 Broadway New York, NY 10036 212-730-4000	376
Morse Operations 1240 North Federal Highway Fort Lauderdale, FL 33304 305-568-0770	192
Morse Shoe (1987) 555 Turnpike Street Canton, MA 02021 617-828-9300	331
MA Mortenson PO Box 710 Minneapolis, MN 55440 612-522-2100	320
Musicland Group (1988) 7500 Excelsior Boulevard Minneapolis, MN 55426 612-932-7700	264
NWA (1989) Minneapolis St Paul Intl Airport St Paul, MN 55111 612-726-2111	11

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Company	Rank
National Car Rental (1986) 7700 France Avenue South Minneapolis, MN 55435 612-830-2121	259
New Hampshire Oak (1989) Liberty Lane Hampton, NH 03842 603-926-1340	302
North Pacific Lumber PO Box 3915 Portland, OR 97208 503-231-1166	311
Oklahoma Publishing PO Box 25125 Oklahoma City, OK 73125 405-232-3311	221
Oppenheimer Group Oppenheimer Twr, World Fincl Ctr New York, NY 10281 212-667-7000	197
Owens-Illinois (1987) One Seagate Toledo, OH 43666 419-247-5000	29
Oxbow 1601 Forum Place West Palm Beach, FL 33402 407-697-4300	100
PIE Nationwide (1986) PO Box 2408 Jacksonville, FL 32203 904-798-2000	363
PMC PO Box 1367 Sun Valley, CA 91353 818-896-1101	164
Pacific Holding 10900 Wilshire Boulevard, Suite 1600 Los Angeles, CA 90024 213-208-6055	175
Arnold Palmer Automotive Group Route 30 East, PO Box 615 Latrobe, PA 15650 412-537-9700	388
Charles Pankow Builders 2476 North Lake Avenue Altadena, CA 91001 213-684-2320	279
Parsons & Whittemore Four International Drive Rye brook, NY 10573 914-937-9009	377
Parsons Corp (1985) 100 West Walnut Street Pasadena, CA 91124 818-440-2000	203
Payless Cashways (1988) 2300 Main Street Kansas City, MO 64141 816-234-6000	64
Penske 13400 Outer Drive West Detroit, MI 48239 201-758-6620	48
Pepper Cos 643 North Orleans Street Chicago, IL 60610 312-266-4703	387
Perdue Farms PO Box 1537 Salisbury, MD 21802 301-543-3000	141
Phar-Mor PO Box 400 Youngstown, OH 44501 216-746-6641	81
Placid Oil 3900 Thanksgiving Tower Dallas, TX 75201 214-880-1000	354
Polo Ralph Lauren 40 West 55th Street New York, NY 10019 212-603-2600	104
Potamkin Manhattan 787 Eleventh Avenue New York, NY 10019 212-603-7231	152
Price Waterhouse 1251 Sixth Avenue New York, NY 10020 212-489-8900	35
Prime Computer (1990) Prime Park Natick, MA 01760 508-655-8000	86
Prospect Motors 645 Highway 49 & 88 N Jackson, CA 95642 209-223-1740	274
Publix Super Markets PO Box 407 Lakeland, FL 33802 813-688-1188	12
Pueblo International (1988) 1300 NW 22nd Street Pompano Beach, FL 33069 305-977-2500	156
Pullman (1988) 220 South Orange Avenue Livingston, NJ 07039 201-535-9522	235
QuikTrip PO Box 3475 Tulsa, OK 74101 918-836-8551	390
RAB Holdings 444 Madison Avenue, Suite 601 New York, NY 10022 212-688-4500	62
RJR Nabisco (1989) 1301 Sixth Avenue New York, NY 10019 212-258-5600	4
Racetrac Petroleum PO Box 105035 Atlanta, GA 30348 404-431-7600	318
Raley's 500 West Capitol Avenue West Sacramento, CA 95605 916-373-3333	120
Randall's Food Markets 3663 Briar Park Houston, TX 77042 713-268-3500	186
Red Apple Group 823 Eleventh Avenue New York, NY 10019 212-580-6805	67
Reliance Electric (1986) 6065 Parkland Boulevard Cleveland, OH 44124 216-266-5800	93
Restaurant Enterprises Group One Park Plaza Jamboree Ctr, Suite 900 Irvine, CA 92714 714-852-5745	181
Revco DS (1986) 1925 Enterprise Parkway Twinsburg, OH 44087 216-425-9811	49
Rich Products 1150 Niagra Street Buffalo, NY 14213 716-878-8000	245
Riklis Family 725 Fifth Avenue New York, NY 10022 212-735-9500	45
Rock-Tenn PO Box 4098 Norcross, GA 30091 404-448-2193	341
Roseburg Forest Products PO Box 1088 Roseburg, OR 97470 503-679-3311	239

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Company	Rank
Rosenthal Cos 1550 Wilson Boulevard, Suite 700 Arlington, VA 22209 703-522-2300	393
Ruffin Cos PO Box 17087 Wichita, KS 67217 316-942-7940	367
Rugby-Darby Group Cos 100 Banks Avenue Rockville Center, NY 11570 516-536-3636	398
S&A Restaurant (1989) PO Box 6660103 Dallas, TX 75266 214-404-5000	262
S&P Co 100 Shoreline Highway, Bldg B, Suite 39 Mill Valley, CA 94941 415-332-0550	378
Sammons Enterprises 403 South Akard Dallas, TX 75202 214-670-9790	96
Save Mart Supermarkets PO Box 4278 Modesto, CA 95352 209-577-1600	163
Schal Associates 200 West Hubbard Street Chicago, IL 60610 312-245-1000	216
Peter J Schmitt Co 355 Harlem Road West Seneca, NY 14224 716-825-1111	155
Schneider National PO Box 2545 Green Bay, WI 54306 414-497-2201	257
Schnuck Markets 11420 Lackland Road St Louis, MO 63146 314-994-4400	158
Schottenstein Stores 3241 Westerville Road Columbus, OH 43224 614-221-9200	208
Schreiber Foods PO Box 19010 Green Bay, WI 54307 414-437-7601	161
Schwan's Sales Enterprise 115 West College Drive Marshall, MN 56258 507-532-3274	91

Company	Rank
Science Applications International 10260 Campus Point Drive San Diego, CA 92121 619-546-6000	160
Scoular Co 2027 Dodge Street Omaha, NE 68102 402-342-3500	121
Sealy 1228 Euclid Avenue Cleveland, OH 44115 216-522-1310	255
Service America (1987) 88 Gatehouse Road Stamford, CT 06904 203-964-5000	144
Shapell Industries 8383 Wilshire Boulevard, Suite 700 Beverly Hills, CA 90211 213-655-7330	254
Sierra Pacific Industries PO Box 496028 Redding, CA 96049 916-365-3721	389
Silgan (1989) Four Landmark Square, Suite 301 Stamford, CT 06901 203-975-7110	326
JR Simplot Co PO Box 27 Boise, ID 83707 208-336-2110	88
Simpson Investment 1201 Third Avenue, Suite 4900 Seattle, WA 98101 206-224-5000	218
SnyderGeneral 3219 McKinney Avenue Dallas, TX 75204 214-754-0500	189
Southland (1987) PO Box 711 Dallas, TX 75221 214-828-7587	6
Southwire PO Box 1000 Carrollton, GA 30119 404-832-4242	111
Steelcase PO Box 1967 Grand Rapids, MI 49501 616-247-2710	73

Company	Rank
Stop & Shop Cos (1988) One Bradlee Circle Braintree, MA 02184 617-380-8000	23
Stroh Brewery 100 River Place Detroit, MI 48207 313-446-2000	112
Sunshine Biscuits (1988) 100 Woodbridge Center Drive Woodbridge, NJ 07095 201-855-4000	379
Super Rite Foods (1989) PO Box 2261 Harrisburg, PA 17105 717-232-6821	205
Supermarkets General (1987) 301 Blair Road Woodbridge, NJ 07095 201-499-3000	10
Sverdrup 801 North Eleventh Street St Louis, MO 63101 314-436-7600	384
Sweet Life Foods 1120 Harvey Lane Suffield, CT 06078 203-623-1681	176
Sweetheart Holdings (1989) 7575 South Kostner Avenue Chicago, IL 60652 708-767-3300	207
TLC Beatrice Intl Holdings (1986) 9 West 57th Street, 48th Floor New York, NY 10019 212-756-8900	127
TRC One Pierce Place, Suite 100E Itasca, IL 60143 708-250-0471	242
Tang Industries 1965 Pratt Boulevard Elk Grove Village, IL 60007 708-806-7600	268
Tauber Oil PO Box 4645 Houston, TX 77210 713-869-8700	119
Taubman Co 200 East Long Lake Road Bloomfield Hills, MI 48304 313-258-6800	125
Thrifty Oil 10000 Lakewood Boulevard Downey, CA 90240 213-923-9876	142

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Company	Rank
Tishman Realty & Construction 666 Fifth Avenue New York, NY 10103 212-399-3600	134
Titan Industrial 555 Madison Avenue New York, NY 10022 212-421-6700	380
Topa Equities Ltd 1800 Avenue of the Stars, Suite 1400 Los Angeles, CA 90067 213-203-9199	349
Tops Markets (1986) 60 Dingens Street Buffalo, NY 14206 716-823-3712	131
Towers, Perrin 245 Park Avenue New York, NY 10167 212-309-3400	266
Tracor (1987) 6500 Tracor Lane Austin, TX 78725 512-926-2800	296
Trammell Crow 2001 Ross Avenue, Suite 3500 Dallas, TX 75201 214-979-5100	115
Trans World Airlines (1988) 100 South Bedford Road Mt Kisco, NY 10549 914-242-3000	20
Transammonia 350 Park Avenue New York, NY 10022 212-223-3200	132
Treasure Chest Advertising 511 West Citrus Edge Glendora, CA 91740 818-914-3981	381
Trump Organization 725 Fifth Avenue New York, NY 10022 212-832-2000	89
UIS 600 Fifth Avenue, 27th Floor New York, NY 10020 212-581-7660	324
Union Holdings c/o Shane & Gould 1251 Sixth Avenue New York, NY 10020 212-827-3676	101
Uniroyal Chemical (1989) World Headquarters Middlebury, CT 06749 203-573-2000	215
United Co PO Box 1280 Bristol, VA 24203 703-466-3322	395
United Parcel Service Greenwich Office Pk #5 Greenwich, CT 06831 203-862-6000	5
United Van Lines One United Drive Fenton, MO 63026 314-326-3100	232
VT 8500 West Shawnee Mission Parkway Merriam, KS 66202 913-432-6400	136
WWF Paper Two Bala Plaza Bala Cynwyd, PA 19004 215-667-9210	246
Walbridge, Aldinger 613 Abbott Street Detroit, MI 48226 313-963-8000	394
Jim Walter (1988) 4010 Boy Scout Boulevard Tampa, FL 33607 813-873-4194	314
Walton Monroe Mills PO Box 1046 Monroe, GA 30655 404-267-9411	351
Warnaco (1986) 90 Park Avenue, 12th Floor New York, NY 10016 212-661-1300	361
Warren Equities 10 East 53rd Street, 20th Floor New York, NY 10022 212-751-8100	315
George E Warren 605 17th Street Vero Beach, FL 32960 407-778-7100	63
Washington Corp PO Box 8182 Missoula, MT 59807 406-523-1300	382
Watt Industries PO Box 2114 Santa Monica, CA 90406 213-450-0779	260
Wawa Red Roof, Baltimore Pike Wawa, PA 19063 215-358-8000	359
Wegmans Food Markets PO Box 844 Rochester, NY 14692 716-328-2550	102
Wheaton Industries 1101 Wheaton Avenue Millville, NJ 08332 609-825-1400	355
White Swan (1988) 2700 Handley-Ederville Road Fort Worth, TX 76118 817-284-4844	261
Whiting-Turner Contracting 300 East Joppa Road Towson, MD 21204 301-821-1100	383
Wickes Lumber (1988) 706 Dearpath Drive Vernon Hills, IL 60061 708-367-6540	165
Wilbur-Ellis 320 California Street San Francisco, CA 94104 415-772-4000	219
Woodward & Lothrop/J Wannamaker (1985) 1025 F Street NW Washington, DC 20013 202-879-8222	193
Worldmark 1208 United States Highway One North Palm Beach, FL 33408 407-626-3116	280
York International (1988) 631 South Richland Avenue York, PA 17403 717-771-7890	94
Young & Rubicam 285 Madison Avenue New York, NY 10017 212-210-3000	196
Young's Market 500 South Central Avenue Los Angeles, CA 90013 213-629-5571	212
Yucaipa Cos 250 West First Street, Suite 210 Claremont, CA 91711 714-626-8776	68
HB Zachry PO Box 21130 San Antonio, TX 78221 512-922-1213	267

Commentary by Michael Gianturco

PEER REVIEW

When a scientist's star is rising, success shines first in a publication called the *Science Citation Index*. The index is a 21-volume annual issued by the Institute for Scientific Information in Philadelphia. Each year the index reports an updated count of the number of times a given scientific paper has been cited as a reference in other scientific papers. This seemingly dry collection of numbers can be a fertile source of basic information for investors.

Citation reports show very clearly where scientists are focusing attention and resources. It is in these hot areas that research is most likely to pay off. But be careful interpreting these data. A published research idea will not automatically generate profits for the company that sponsored it. The idea may never be brought to fruition, or—if it is a sound idea that has been badly protected—it may generate profits for another company altogether. Or it may get stopped short of a necessary regulatory approval, for example by the Food & Drug Administration. In short, good science cannot guarantee good profits. But it has to be there, or the profits won't follow.

A germinal scientific paper may pull 200 or more citations per month. How significant to investors is the number of citations for work published by scientists in industry? David Pendlebury, an analyst at the Institute for Scientific Information, tracks these statistics. Results of a study he recently conducted in biotechnology are shown in the table. These citations are tabulated by company affiliation. It's like a Nielsen rating system for biotech. It shows which companies' research work is being watched most closely by scientists.

Not surprisingly, industry leader Genentech topped the list, with 32,418 citations during the eight-year period 1981-88. Next best was Biogen, with 7,884. This table lists the companies in order of a calculated ratio of citations per paper, so that small and large companies can be fairly compared. Genentech wins on this basis, too.

It takes two years for citations of a new paper to mount up to a significant level, so this type of study lags. In four years, however, changes in this measure of audience response can be seen. Genentech did as well in the second four years of this eight-year study as it did in the first four. (Contrast this steady scientific performance with Genentech's erratic stock market record.) Citation rates for Immunex and Centocor have retreated in recent years: Genetics Institute advanced and California Biotechnology almost doubled its score.

Amgen has become a commercial and stock market juggernaut—its shares are up 81% in just one year—yet in terms of having its research cited, it is at the bottom of the list. The company's scientists have published quite a bit, but their papers are not being cited very often. Amgen's archrival, Genetics Institute, has drawn much more scientific interest but has fared less well with financial analysts and the markets. The stock is up a comparatively slight 9% from year-ago levels. Analysts estimate that Amgen will earn $1.25 per share in its current fiscal year; estimates suggest Genetics Institute may lose $1.71.

This is not necessarily a paradox. Biotech companies whose papers rivet the attention of the scientific community may be in for tough sledding at the FDA—precisely because they are exploring new ground. In publishing they may hand away some of their technology to their competitors. Finally, it is a commercial truism that "the pioneers are the guys with the arrows in their backs." It does not necessarily pay to come in first scientifically—in the short run.

In the long run scientific strength is the mainspring of the biotechnology stocks, and this strength is clearly pinpointed by the *Citation Index* studies. The acknowledgment by scientists of a company's scientific competence is a pretty fair signal of ultimate success. Management must deliver on this scientific promise. But if the science is not intriguing to scientists, the promise is probably not there. ■

Biotech's Nielsen ratings

One way to rate a biotech company is to count the times its research is cited by scientists elsewhere—an interesting, if imperfect, way to predict success.

Company	Scientific papers published	Times papers cited	Cites per paper
Genentech	718	32,418	45
Immunex	120	4,045	34
Biotech Research	49	1,629	33
Molecular Genetics	57	1,855	33
Chiron	207	6,365	31
Genetics Institute	166	5,041	30
DNAX (Schering-Plough)	166	4,963	30
Centocor	95	2,819	30
Biogen	269	7,884	30
California Biotechnology	115	2,523	22
Cetus	317	5,828	18
Amgen	132	2,162	16

Source: Institute for Scientific Information

Michael Gianturco is president of The Princeton Portfolios, a New Jersey asset management firm that specializes in science and technology investments.

The Forbes Wall Street Review

By Eric S. Hardy

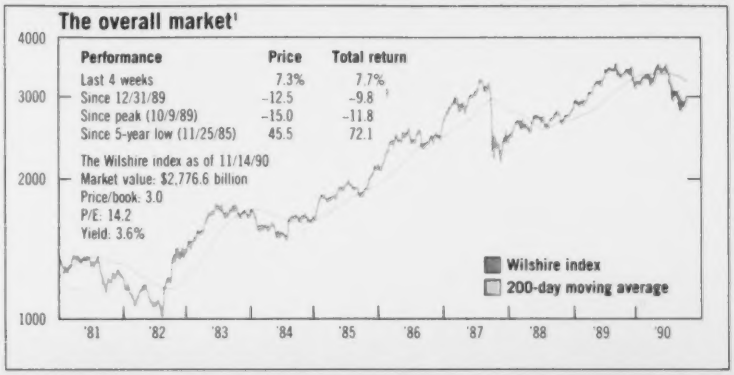
What's wrong with the market? The four B's, says Alan Ackerman, Gruntal & Co. senior vice president: "Banks, bullets, budgets and bears."

Among Ackerman's picks for bullet-dodging stocks are Boeing and Glaxo Holdings. Boeing, for which Value Line predicts earnings of $4 a share this year, was recently trading at 46½, down from a high of 61⅞. Ackerman says Boeing's overseas sales (54% of its $20 billion total) should benefit from the weak dollar. Glaxo, a British pharmaceutical firm with a large presence in the U.S., should weather a recession with strong sales of such hot prescription drugs as Ventolin and Zantac.

During the two weeks to Nov. 14, several of the stronger financials—Barnett Banks, State Street Boston and Golden West Financial—staged recoveries. Some of the beleaguered cellular telephone stocks were also strong. Both McCaw Cellular and Metro Mobile posted gains of 41%.

Over the last ten trading days the Dow industrials hit a seven-week high, but the Nasdaq index finished with the largest increase, a gain of 8.2%. The capitalization-weighted Wilshire index was up 5.6%, while an equal-weighted version was up 3.7%. The ratio of price to earnings of the weighted Wilshire index from the year's start to now has declined by over one-third, from 22 to 14, while its yield has risen from 3% to 3.6%.

The overall market[1]



The Best Performing Stocks

Company	Price	2-week change	P/E	Avg vol (thou)[2]	Rel vol[3]
Barnett Banks	21⅛	49%	8	4,417	2.7
State Street Boston	33⅛	44	11	4,132	2.3
Continental Corp	23¾	43	17	2,225	1.2
Storage Technology	19½	42	10	2,530	0.7
PNC Financial	23	42	9	2,586	1.7

The Worst Performing Stocks

Company	Price	2-week change	P/E	Avg vol (thou)[2]	Rel vol[3]
Scripps Howard Broadcasting	34	-31%	13	8	0.7
Union Texas Petroleum	17½	-21	60	918	1.3
Adolph Coors	20⅛	-18	22	2,193	1.3
Browning-Ferris Industries	23⅛	-17	NM	14,305	2.4
LAC Minerals	6⅝	-16	44	527	0.4

Closeup on the Market

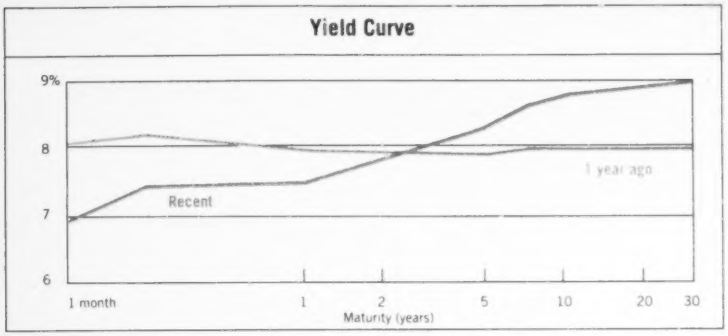
Index or investment	Price	2-week change
Wilshire index 6,000 stocks, capitalization weighted	2,993.78	5.6%
Wilshire index 6,000 stocks, equal weighted	16.69	3.7
Dow Jones industrials 30 stocks, divisor-adjusted price average	2,559.70	4.8
S&P 500 Capitalization weighted cross section, major stocks	320.40	5.4
NYSE Capitalization weighted, all listed common stocks	174.70	5.1
Amex Capitalization weighted total return, stocks, warrants	297.90	3.5
Nasdaq Capitalization weighted, all issues except warrants	356.90	8.2
Amex international market index Capitalization weighted, 50 largest ADRs	294.84	-0.7

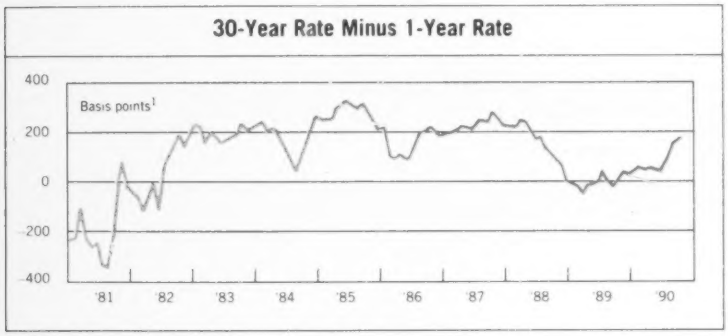
Index or investment	Price or rate	2-week change
Europe, Australia, New Zealand and Far East[4] (EAFE) a dollar denominated capitalization weighted index	808.50	-2.3%
Institutional[5] Approximately 200 stocks with high institutional ownership	90.62	10.1
Individual[5] Approximately 200 stocks with low institutional ownership	81.41	0.9
Russell 2000 index 2000 stocks with small market values, capitalization weighted	124.74	-5.0
Gold[6] (composite quote of 6 major dealers)	$377.60	-0.6
Yen[6] (per $U.S.)	129.07	-0.7
Commodity index[6] (CRB futures index, 1967 = 100)	225.59	-1.8
Oil[6] (W Texas Intermediate)	$31.15	-11.6
T bills[6] (90 days)	7.06%	-2 basis points[7]
Broker loan rate[6]	9.50%	25 basis points[7]

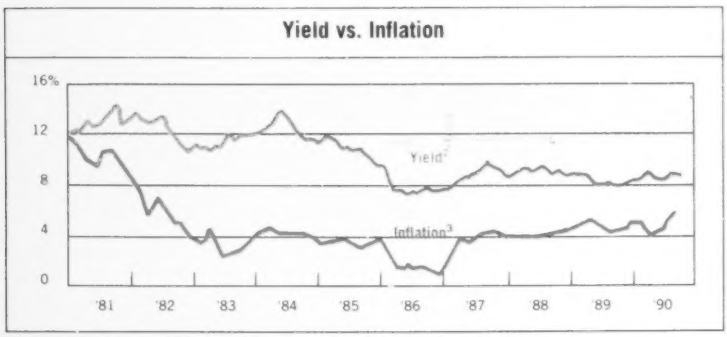
Note: All data for periods ending 11/14/90. Wilshire index reflects price performance. It differs slightly from market value of outstanding stocks because of retirements of equity since index was created. Stocks listed above have market capitalizations of $500 million or more. [1]Capitalization weighted, prepared by Wilshire Associates, Santa Monica, Calif. [2]Average daily volume over a 2-week period. [3]Average daily volume over the last 2 weeks, divided by the average daily volume over the preceding 3 months. [4]Morgan Stanley Capital International Perspective. [5]A. Arbel, Cornell University, using Ford Database from Ford Investor Services. [6]Knight-Ridder Financial Information. [7]A basis point is equal to one-hundredth of a percentage point. NM: Not meaningful.

Fixed Income Review

By Eric S. Hardy







Spread over Treasurys		Total returns		
Security	Basis points[1]	Security	1 year[6]	3 years[6,7]
AA corporates	104	AAA corporates	5.6%	10.3%
AAA industrials	94	Ginnie Maes[5]	8.3	11.1
Ginnie Maes	112	Junk corporates[4]	-8.9	10.9
Junk corporates[4]	1,060	Municipals[5]	7.4	9.9
Municipals[5]	209	Treasury bonds	6.0	9.3

Concern about credit quality is one reason municipal and corporate interest rates have increased. Moody's Investors Service reports that, during the first half of 1990, it downgraded $235 billion in corporate debt securities and upgraded only $51 billion worth. For every company whose debt rating was increased, there were more than four whose ratings declined. That's a sharp deterioration from 1989, when the ratio was 2.5 declines to every increase. The trend does not appear to be improving: Of the 77 debt issues currently under review by Moody's, only 14 are being considered for an upgrade.

John Lonski, a Moody's analyst, says that overall corporate credit quality is even worse than it was during the last recession. Even for bonds not considered junk, the turmoil has caused a flight to quality. "The spread between the highest- and lowest-rated investment-grade industrial corporate debt is currently 205 basis points," Lonski says (that is, slightly more than two percentage points of annual yield). "That's the widest since January 1983." Some bonds Moody's still considers investment grade have junk yields. Two Chrysler bonds—the 12s of 2015 and the 10.95s of 2017—offer a yield to maturity of more than 17%.

On the quality end, the real (after inflation) yield of ten-year Treasurys is at its lowest level since 1981. Here, inflation is measured by the trailing 12-month change in consumer prices. Long Treasury bonds currently offer a nice yield premium over short-term notes *(see top left)*. Sounds tempting, but keep in mind that a bond maturing in 2020, even one that carries no credit risk, is, next to zero coupon bonds, one of the most volatile bonds around. It will decline in price much faster than short-term notes if interest rates rise. It will also appreciate much more if rates fall.

Neuberger & Berman, a fund distributor and money manager in New York City, says that the best compromise for purely income-oriented investors is five-year Treasury notes. This maturity subjects investors to only 25% or 30% of the interest-rate risk carried by longer-term bonds while participating in about 95% of the income of those securities.

Note: Except where footnoted, all information provided by Berkeley, Calif.-based Barra, a financial consulting firm. [1]A basis point is equal to one-hundredth of a percentage point. [2]Yield on ten-year Treasurys. [3]The trailing 12-month increase in the Consumer Price Index, through 9/30/90. [4]Source: First Boston. [5]Source: Shearson Lehman Brothers. [6]Through 10/31/90. [7]Three-year total return, annualized.

MONEY & INVESTMENTS

Investors spend a lot of money for experts to read the interest rate future. There is a cheaper and more accurate way.

WHITHER INTEREST RATES?

By Charles E. Babin

With 1991 around the corner, investors are worried about the interest rate environment in the year ahead. It's a critical variable, one that figures pervasively into financial returns and the nation's economy. As noted economist Irving Fisher observed in 1907, the rate of interest "permeates all economic relations" and enters into all our far-reaching decisions.

Given this importance, it's not surprising that so many resources are consumed searching for reliable interest rate forecasts. Many investors spend hundreds, if not thousands, of dollars annually on economic newsletters in an effort to get a fix on rates. But when it comes to forecasting Treasury bill yields, there's reason to believe that money is largely wasted, especially if one considers an efficient and very low cost alternative.

It is understandable why the experts fret over their ability to pinpoint the upcoming year's average three-month bill rate—standard packaging for Treasury bill forecasts. Given the variability of even these so-called riskless securities, countless economists have come to appreciate just how humbling the forecasting business can be.

Consider 1980. Measured as a calendar-year average, T bills posted a mean yield of 11.5%, up 150 basis points from 1979's average rate. The averaging process, however, masked the severity of the market's turbulence during 1980, and hence the degree of difficulty in predicting the interest rate scenario. At the start of the year three-month Treasurys were hovering just above 12%. By late March rates hit 16%. By June the spot yield dropped back to 6.18%, and then rebounded to slightly over 17% in December.

While 1980 was exceptional, it wasn't the only year characterized by extreme intrayear fluctuations. Measured peak-to-trough, T bill pricing shifted more than 700 basis points in 1981 and in 1982 as well. Over the balance of the decade, moves on the order of 150 to 300 basis points were commonplace.

Interestingly, investors have an alternative, highly efficient way to anticipate interest rate movement. At the close of the old year, turn to the "Treasury Bonds, Notes & Bills" section of your favorite financial paper. Find the yield quotation for a T bill with three months to maturity. Now naively assume this rate to be the average bill rate for the upcoming calendar year.

Sophisticated? No. Effective? Incredibly so, as the forecasting record of these "market" forecasts attests.

For instance, the spot three-month T bill yield at the end of 1988 (8.1%) was exactly 1989's average rate. And 1989 was no fluke. As shown in the table, on average the technique was within 60 basis points of correctly forecasting the actual outcome over the last ten years. The "experts," as tracked by a survey of 50 or so of the nation's top economists, managed to beat the market on only three occasions (1988, 1983 and 1982).

Notice, too, that during the extraordinary 1980-82 period, the "market" forecasts were within their average error rate. In this same period, the experts were not nearly as clairvoyant and suffered some of their biggest misses.

Thus far, 1990 is running true to form. At year-end 1989 the three-month T bill rate was 7.6% (1990's market forecast) and the experts were predicting 7.1% for the year. Through mid-November, this year's average yield was running around 7.6%. With only weeks remaining, it's unlikely the full-year mean will be markedly different.

Where are interest rates headed next year? Don't ask me or the experts. Check out Treasury bills in the third section of the Jan. 2, 1991 *Wall Street Journal*. ■

Go to the source

Divining interest rates: market prices versus expert opinion.

	Average 3-month T bill yield	Market forecast[1]	Difference	Expert forecast[2]	Difference
1989	8.1%	8.1%	0.0%	7.8%	0.3%
1988	6.7	5.7	1.0	6.0	0.7
1987	5.8	5.7	0.1	5.4	0.4
1986	6.0	7.1	0.9	7.1	0.9
1985	7.5	7.9	0.4	8.6	1.1
1984	9.5	9.0	0.5	8.8	0.7
1983	8.6	7.9	1.7	7.7	0.9
1982	10.6	11.1	0.5	10.8	0.2
1981	14.0	14.3	0.3	11.4	2.6
1980	11.5	12.0	0.5	10.4	1.1
Average			0.6		0.9

[1]Spot 3-month Treasury bill yield at end of previous year. [2]Mean estimate at end of previous year of Blue Chip Economic Indicators survey.

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